



# **NAVAL POSTGRADUATE SCHOOL**

**MONTEREY, CALIFORNIA**

---

## **MBA PROFESSIONAL REPORT**

---

### **Cost in Higher Education**

---

**By:     Angeliki Elen Magoula  
          Christopher S. Myers  
          June 2007**

**Advisors:     Ken Euske,  
                  Bill Gates**

*Approved for public release; distribution is unlimited.*

THIS PAGE INTENTIONALLY LEFT BLANK

<b>REPORT DOCUMENTATION PAGE</b>			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
<b>1. AGENCY USE ONLY (Leave blank)</b>		<b>2. REPORT DATE</b> June 2007	<b>3. REPORT TYPE AND DATES COVERED</b> MBA Professional Report	
<b>4. TITLE AND SUBTITLE</b> Cost in Higher Education			<b>5. FUNDING NUMBERS</b>	
<b>6. AUTHOR(S)</b> Christopher Myers and Angeliki-Elen Magoula				
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> Naval Postgraduate School Monterey, CA 93943-5000			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>	
<b>9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> N/A			<b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>	
<b>11. SUPPLEMENTARY NOTES</b> The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
<b>12a. DISTRIBUTION / AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited			<b>12b. DISTRIBUTION CODE</b>	
<b>13. ABSTRACT (maximum 200 words)</b> <p>State and Federal legislature require that standard data on education-related expenditures be provided by universities and colleges in order to standardize methodology and accountability used nationwide by institutions of higher education. The aim is to review existing cost criteria and procedures for determining costs. Accounting structures vary by institution, and by school. This variability across schools makes decision making a difficult task.</p> <p>The objective of this research is to look into the cost structure used presently by two institutions of higher education, namely the Naval Postgraduate School (NPS) and California State University of Monterey Bay (CSUMB). The financial data that determines the consistency of the cost metrics in the decision making process of these institutions is considered. An analysis of the cost information used to make and support decisions is presented. The variety of the cost structures within the researched institutions is analyzed and compared, in order to identify the factors that generate the differences.</p> <p>The research concluded that both institutions should continue to develop the cost structure to have a comparative view across schools for more efficient planning and the tracing and updating of estimates.</p>				
<b>14. SUBJECT TERMS</b> Cost, Cost Structure, Discipline Mix, Budget Structure			<b>15. NUMBER OF PAGES</b> 83	
			<b>16. PRICE CODE</b>	
<b>17. SECURITY CLASSIFICATION OF REPORT</b> Unclassified	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> Unclassified	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b> Unclassified	<b>20. LIMITATION OF ABSTRACT</b> UL	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)  
Prescribed by ANSI Std. Z39-18

THIS PAGE INTENTIONALLY LEFT BLANK

**Approved for public release; distribution is unlimited**

**COST IN HIGHER EDUCATION**

Angeliki-Elen Magoula, Lieutenant, Hellenic Navy  
Christopher S. Myers, Lieutenant, United States Navy

Submitted in partial fulfillment of the requirements for the degree of

**MASTER OF BUSINESS ADMINISTRATION**

from the

**NAVAL POSTGRADUATE SCHOOL**  
**June 2007**

Authors:

---

Angeliki-Elen Magoula

---

Christopher S. Myers

Approved by:

---

Kenneth Euske, Lead Advisor

---

Bill Gates, Support Advisor

---

Robert N. Beck, Dean  
Graduate School of Business and Public Policy

THIS PAGE INTENTIONALLY LEFT BLANK

# **COST IN HIGHER EDUCATION**

## **ABSTRACT**

State and Federal legislatures require that standard data on education-related expenditures be provided by universities and colleges. Studies were initiated by The National Association of College and University Business Officers (NACUBO) to standardize methodology and accountability used nationwide by institutions of higher education. The aim was to enable legislatures and institutions to review existing cost criteria and procedures for determining costs. The accounting structures vary by institution and this lack of uniformity is also apparent within schools or departments of the same institution. This lack of uniformity and standardization across departments and schools makes decision making a difficult task.

The objective of this research is to look into the cost structure used presently by two institutions of higher education, namely the Naval Postgraduate School (NPS) and California State University of Monterey Bay (CSUMB). The financial data that determines the consistency of the cost metrics in the decision making process of these institutions is considered. An analysis of the cost information used to make and support decisions is presented. The variety of the cost structures within the researched institutions is analyzed and compared, to identify the factors that generate the differences in the cost structures.

The research concluded that both institutions should continue to develop the cost structure to have a comparative view across schools for more efficient planning, and both tracing and updating estimates.

THIS PAGE INTENTIONALLY LEFT BLANK



## TABLE OF CONTENTS

<b>I.</b>	<b>INTRODUCTION.....</b>	<b>1</b>
<b>A.</b>	<b>BACKGROUND .....</b>	<b>1</b>
<b>B.</b>	<b>OBJECTIVE OF THE RESEARCH .....</b>	<b>2</b>
<b>C.</b>	<b>RESEARCH QUESTIONS .....</b>	<b>3</b>
<b>D.</b>	<b>BENEFITS.....</b>	<b>3</b>
<b>E.</b>	<b>METHODOLOGY .....</b>	<b>4</b>
<b>F.</b>	<b>LIMITATIONS .....</b>	<b>4</b>
<b>G.</b>	<b>ORGANIZATION OF PROJECT .....</b>	<b>5</b>
<b>II.</b>	<b>LITERATURE REVIEW .....</b>	<b>7</b>
<b>A.</b>	<b>INTRODUCTION.....</b>	<b>7</b>
<b>B.</b>	<b>COST OF COLLEGE PROJECT.....</b>	<b>7</b>
<b>1.</b>	<b>Method .....</b>	<b>8</b>
<b>2.</b>	<b>Four Principles .....</b>	<b>8</b>
<b>3.</b>	<b>Study Results .....</b>	<b>9</b>
<b>4.</b>	<b>Conclusion .....</b>	<b>10</b>
<b>C.</b>	<b>MAKING OPPORTUNITY AFFORDABLE INITIATIVE .....</b>	<b>13</b>
<b>D.</b>	<b>COURSE CAPACITY MODULE.....</b>	<b>15</b>
<b>1.</b>	<b>Method .....</b>	<b>16</b>
<b>2.</b>	<b>Allocation .....</b>	<b>17</b>
<b>E.</b>	<b>TRENDS IN HIGHER EDUCATION .....</b>	<b>19</b>
<b>F.</b>	<b>SUMMARY .....</b>	<b>22</b>
<b>III.</b>	<b>NAVAL POSTGRADUATE SCHOOL (NPS).....</b>	<b>23</b>
<b>A.</b>	<b>THE ADMINISTRATIVE “MODEL” .....</b>	<b>23</b>
<b>1.</b>	<b>Intended Tasks .....</b>	<b>23</b>
<b>2.</b>	<b>Model Overview .....</b>	<b>25</b>
<b>a.</b>	<b><i>Number of Courses Held .....</i></b>	<b><i>25</i></b>
<b>b.</b>	<b><i>Direct Teaching Cost .....</i></b>	<b><i>25</i></b>
<b>c.</b>	<b><i>Control Assumptions.....</i></b>	<b><i>26</i></b>
<b>d.</b>	<b><i>Instruction Costs .....</i></b>	<b><i>28</i></b>
<b>e.</b>	<b><i>Capacity Utilization.....</i></b>	<b><i>29</i></b>
<b>3.</b>	<b>Projected Costs.....</b>	<b>32</b>
<b>B.</b>	<b>THE DEPARTMENTAL PROJECTIONS.....</b>	<b>32</b>
<b>1.</b>	<b>The Graduate School of Business and Public Policy (GSBPP).....</b>	<b>33</b>
<b>2.</b>	<b>The Computer Science Department (CS) .....</b>	<b>33</b>
<b>C.</b>	<b>THE BUDGET .....</b>	<b>34</b>
<b>1.</b>	<b>Navy Mission Funds.....</b>	<b>34</b>
<b>2.</b>	<b>Reimbursable Funds .....</b>	<b>34</b>
<b>3.</b>	<b>Other Indirect Costs .....</b>	<b>35</b>
<b>IV.</b>	<b>CALIFORNIA STATE UNIVERSITY OF MONTEREY BAY (CSUMB).....</b>	<b>37</b>
<b>A.</b>	<b>BUDGETING PRACTICES .....</b>	<b>37</b>

1.	Color of Money.....	37
B.	TYPES OF FUNDING .....	38
1.	General Fund.....	39
2.	Enterprise Funds.....	39
a	Foundation Auxiliary Enterprise Funds .....	40
b.	Other Auxiliary Enterprise Funds .....	41
3.	Lottery Fund.....	41
4.	Capital Outlay .....	41
5.	CSU Trust Fund.....	41
C.	2006/2007 CSUMB GENERAL FUND CAMPUS BUDGET .....	42
1.	Full Time Equivalent Student.....	43
2.	General Fund Campus Budget .....	44
D.	SOURCES AND USES OF REVENUE.....	46
1.	Sources of Revenue .....	46
2.	Uses of Revenue.....	51
E.	CONCLUSION .....	51
V.	ANALYSIS, DISCUSSION, AND CONCLUSIONS .....	55
A.	INTRODUCTION.....	55
B.	COMMON GROUND .....	55
C.	BUDGET POLICY FACTOR .....	57
D.	ACTIVITY BASED COSTING.....	58
E.	CONTROL SYSTEM.....	58
F.	OVERSTATING THE INSTRUCTIONAL COST FACTOR.....	61
G.	DISTORTED INCENTIVES .....	61
H.	CONCLUSION .....	63
	LIST OF REFERENCES .....	65
	INITIAL DISTRIBUTION LIST .....	69

## LIST OF FIGURES

Figure 1.	Instruction and Student Services.....	11
Figure 2.	Total Cost Minus Price .....	12
Figure 3.	Change in Price of College over Time.....	14
Figure 4.	Design of ABC cost allocation system—department level.....	17
Figure 5.	Component activities within the Budget Office.....	19
Figure 6.	Average published charges for undergraduates, 2005-06.....	20
Figure 7.	Sample average undergraduate budgets, 2005-06 .....	21
Figure 8.	Institutional expenditures.....	21
Figure 9.	A version of control input and variables (from NPS “Administrative Guide”).....	28
Figure 10.	From NPS Administrative Guide: A comparison across Schools and curriculum. ....	29
Figure 11.	Chart of direct teaching cost (from NPS Administrative Guide).....	30
Figure 12.	Capacity analysis for 2003 programs (from NPS Administrative Guide) .....	31
Figure 13.	NPS FY 2006 funding sources (From: NPS Command Brief, 2006)).....	35
Figure 14.	CSU 2006/07 Academic Year Resident Undergraduate Fees.....	42
Figure 15.	2006/2007 CSUMB General Fund Campus Budget.....	43
Figure 16.	06/07 Summary By Division .....	47
Figure 17.	06/07 Academic Affairs.....	48
Figure 18.	06/07 College of Arts, Humanities, and Social Sciences(AHSS).....	49
Figure 19.	06/07 CSUMB General Fund Campus Budget-Sources of Revenue.....	50
Figure 20.	06/07 CSUMB General Fund Campus Budget-Uses of Revenue .....	52
Figure 21.	06/07 CSUMB General Fund Campus Budget.....	53

THIS PAGE INTENTIONALLY LEFT BLANK

## **ACKNOWLEDGMENTS**

We are thankful to our families who supported our efforts. We are grateful to our advisors, Dr. Kenneth Euske and Dr. Bill Gates, who gave us the chance to question our knowledge and test their patience. We are appreciative to George Conner (NPS) and Dan Kubiak (CSUMB) for all their help and time that made our data accurate, current and complete.

Finally, we acknowledge the ones who stood in our way, for their mere existence made us stronger and determined for success.

THIS PAGE INTENTIONALLY LEFT BLANK

## **I. INTRODUCTION**

### **A. BACKGROUND**

State and Federal legislatures require standard data on education-related expenditures be provided by universities and colleges.<sup>1</sup> As a result, studies were initiated by The National Association of College and University Business Officers (NACUBO) to standardize methodology and accountability used nationwide by institutions of higher education (Morley 2002, 2). The aim was to enable legislatures and institutions to review existing cost criteria and procedures for determining costs. These cost studies offer a tool to various agencies to assist in policy making and funding decisions. The intent of these studies is not to explain differences between costs among institutions nor do they constitute a funding model (ACE 1998, 302).

The National Commission on the Cost of Higher Education defines “costs” as the amounts that institutions spend to provide education and related educational services to students (ACE 1998, 178). Cost structure is the distribution of costs among the elements of a process (Middaugh 2001, 56). Through the cost structure, the individual steps of the process and resources that are consumed by the process are identified (Middaugh 2001, 56). Middaugh (2001, 56) states that the cost structure:

...characterizes how they [the costs] are allocated and how they [the costs] scale with the size of the task. A cost can relate to financial or other resources such as time.

The NACUBO study (2002) relies on historical expenditure data to calculate the annual cost of institutions of higher education. These annual costs are analyzed through the institution’s financial statements. Furthermore, expenditure is the expense that occurred

---

<sup>1</sup> A legislative example is demonstrated by RCW 28B.76.310, <http://apps.leg.wa.gov/RCW/default.aspx?cite=28B.76.310> (accessed 04/01/07).

from using institutional resources to support the institutional mission (Middaugh 2000, 15). Hence, the cost structure of the educational institution depends on the accounting structure of the institution's budget.

Moreover, previous research has shown that the accounting structures vary by institution and this lack of uniformity is also apparent within schools or departments of the same institution (Middaugh 2001, 103). This lack of uniformity and standardization across departments and schools makes decision making a difficult task. Also, the management of scarce resources can cause the administration to make budget decisions based on the accounting (cost) structure, counter to the ultimate mission of the institution of higher education (Twigg 1999, 72).

In addition, the lack of standardization and methodology results in various agencies' managing the structure from different perspectives. Agencies of a cost structure are defined as the managers of the cumulative elements of costs, and the source of expenditure. Agencies consist of the schools and departments that execute the budget through the budget structure, the supporting offices that manage the resources as distributed by the Comptroller through the budget, the Comptroller who manages the accounting structure, and the administration that is responsible for decision making. A specific example of an agency is the Computer Science Department of NPS. For the purposes of the present research, the budget refers to a list of expenses and revenues, and the budget structure refers to the levels and hierarchy of the budget.

## **B. OBJECTIVE OF THE RESEARCH**

The objective of this research is to look into the cost structure used presently by two institutions of higher education, namely the Naval Postgraduate School (NPS) and California State University of Monterey Bay (CSUMB). The financial data that determines the consistency of the cost metrics in the decision making process of these institutions are considered. An analysis of the cost information used to make and support decisions will be presented.



Subsequently, the expected variety of the cost structures within the researched institutions will be analyzed and compared, to identify the factors that generate the differences in the cost structures.

Initially, the intent was to analyze the differences in the cost structures while researching the introduction of a new course. However, as the research progressed, it was concluded that the decision making process data did not differentiate between the introduction of a new course, and scheduled courses. Hence, the present research analyzes the entire cost structure model across schools and departments.

### **C. RESEARCH QUESTIONS**

This research examines the cost structure of the institutions of higher education in accordance with the current accounting and budgetary structures that govern decision making. In support of this analysis, this research questions:

- How is the cost structure framed?
- What are the factors and key variables that are identified by the present cost structure?
- What are the drivers that are excluded from the model by each institution?
- How has the decision making taken place previously?
- How could the current cost structure be enhanced to assist more efficient decision making?

### **D. BENEFITS**

This research aims to provide evidence that the cost structure in institutions of higher education can be used by the administration as a tool for more efficient decision making. For this reason, the cost structure should include in detail all the factors that support the mission of institutions (Twigg 1999, 10). A visible and publicized cost driver may impact the cost, but there are other not-so-visible variables that also affect the cost.

Controlling for cost requires knowing the exact amounts of cost, reasons for costs, opportunity cost, and the level at which performance can be optimized. The present research presents factors that are not taken into account by the institution, and factors that

would not necessarily decrease cost but could, in effect, increase efficiency and optimize the scarce resources in support of the institution's mission. Furthermore, the analysis articulates the benefits gained or efficiencies lost by implementing the existing cost structure.

## **E. METHODOLOGY**

The research examines the decision making process and the factors that affect the current cost structure. The cost structure takes into account certain critical factors for every institution; hence, the requirement to identify the policies and variables that burden each institution. Consequently, the diversity that exists between the various schools is another factor that must be taken into account. Specifically, it is important to select the cross-departmental factors that affect budget execution and mission completion.

Furthermore, education, either as a mission or product of an institution, requires a qualitative metric. One aim of this research is to note the methods used to promote productivity, mission completion, and decision making. Based on the findings, potential efficiencies (or loss of efficiencies) are discussed to identify their origin.

In support of the present research, information was gathered from various personnel involved with managing the NPS and CSUMB cost structures. Interviews were conducted with financial, administrative, and instructional personnel of both institutions. In addition, electronic databases and other electronic material was collected to identify and categorize the elements of the accounting and budgetary structures of both institutions, to frame the cost structure.

## **F. LIMITATIONS**

As previously discussed, this research is limited to analyzing the cost structures used by two institutions of higher education. The analysis presented in this research cannot be applied to other institutions of higher education because every institution uses its own accounting structure, has different strategic goals, differences in funding resources, and different policy and stakeholders.

Analysis of more institutions and the posting of every cost element/driver would require significantly more research. Relationships, if any, between the results obtained from this analysis and other institutions or methods are not examined. The present analysis gives only minor consideration to external factors or requirements that are faced by the institutions in the course of their decision making and completion of mission goals.

## **G. ORGANIZATION OF PROJECT**

This project is organized into five sections: an introduction, literature review, cost structure of NPS, cost structure of CSUMB, analysis of findings, and conclusions. The introduction provides an overview of the research, the theoretical background, potential benefits, and methodology of the research.

The literature review familiarizes the reader with the current situation, the budgetary restrictions, the legal implications and limitations, and identifies the stakeholders of the decision-making process in higher education. This section reviews existing research and common uses for each of the concepts.

The NPS and CSUMB sections present and discuss the process associated with the cost structure process and the data collected to assist decision making at the administrative level. In addition, the constraints that limit the decision-making process are discussed, while analyzing the budgetary policies that affect mission completion.

Finally, the analysis, discussions, and conclusions section presents the overall results of the research, the similarities and the differences between the cost structure models used at the two institutions, and the methods that could lead to a more efficient structure. The section concludes with ideas for further research.

THIS PAGE INTENTIONALLY LEFT BLANK

## **II. LITERATURE REVIEW**

### **A. INTRODUCTION**

State educational funding is decreasing in many states, reemphasizing the necessity to minimize the costs of higher education. In spite of this fact, there is a demand for increased quality and innovation at institutions of higher education. By definition, the institutions of higher education have a central focus on learning and education. However, stakeholders, such as students, are additionally interested in reducing costs in parallel with increasing quality.

The following sections summarize the findings of various research efforts relevant to college costs. The costs involved in delivering undergraduate education are investigated. The burden of these cost to the student as well as the university are discussed, as well as the increases of education costs with relation to yearly inflation increases. The application of activity-based costing to the university cost system is investigated, in an effort to understand how to manage costs more effectively and minimize underutilized capacity within the university. Research is also provided that contains the results of an Annual Survey distributed to more than 3,000 institutions to gather information regarding enrollment, admissions, degrees and majors, tuition, financial aid, and other aspects of undergraduate education.

### **B. COST OF COLLEGE PROJECT**

A 2002 report from the National Association of College and University Business Officers (NACUBO) entitled, “Explaining College Costs: NACUBO’s Methodology for Identifying the Costs of Delivering Undergraduate Education” (ECC Report) was a result of the National Commission on the Cost of Higher Education’s calling on the nation’s colleges and universities to increase their public accountability and to develop better consumer information about costs and prices (Morley 2002, 2). In response, NACUBO began the Cost of College Project. The goal of that project was to create a uniform methodology that any college or university in the nation could use to explain and present

how much it costs to provide one year of undergraduate education and related services (Morley 2002, 2). The data in the report is the result of input from over 150 universities (Morley 2002, 8).

The ECC report was written by NACUBO for three primary reasons:

- NACUBO was the logical organization to address the task of helping institutions to meet the commission's transparency goal.
- NACUBO is often relied upon by the Washington-based national higher education associations to provide leadership in addressing higher education's accounting, financial, and business management issues at the federal level.
- NACUBO's mission is to create new knowledge in accounting and financial management and find many ways to use it (Morley 2002, 14).

## **1. Method**

The challenge NACUBO faced in creating the ECC Report was to devise a uniform methodology to determine these costs. NACUBO's answer was a standardized questionnaire that was delivered to over 150 universities throughout the country. A key factor was that the questionnaire be simple to use and understand at any university. The data supplied to NACUBO through these standardized questionnaires was analyzed to evaluate individual universities' annual financial statements and derive cost data from the institution's internal accounting methods. The questions were designed to apply to all universities. This was important due to the various sizes, curriculums, and locations of each university (Morley 2002, 18).

## **2. Four Principles**

In creating the university questionnaire and developing the ECC report, NACUBO focused on four guiding principles. These guiding principles explain many of the factors required to achieve balance in the composition and definition of the data needed to complete the new methodology (Morley 2002, 18). These four principles are:

- Rely on basic averaging techniques.
- Concentrate on the cost of undergraduate education.
- Use existing cost allocation methods wherever possible.

- Keep it simple.

Universities use varied cost accounting systems. These principles listed above were designed to overcome the complexity of those varied cost accounting systems and simplify the reporting of university finances (Morley 2002, 23). Applying the standardized questionnaire, the ECC Report developed a template to be used by any university to record their financial information. This questionnaire covered 18 expense classifications. These expense classifications were contained within three major categories: instruction and student services, institutional and community costs, and undergraduate financial aid costs.

The ECC Report required that the questionnaire actually be “applied uniformly” to all universities. Pilot testing provided evidence that the questionnaire would be applied uniformly. Three pilot tests were conducted. As a result of these pilot tests, the derivation of cost components, the instructions, and the reporting format for data submissions were validated before the actual survey was distributed to all universities. Upon completing the pilot testing, the questionnaire was refined and distributed to the network of universities participating in the study (Morley 2002, 20).

### **3. Study Results**

As shown in Figure 1 (page 11), NACUBO determined that the greatest costs were distributed within the cost centers of instruction and student services. These instruction and student services expenses comprised 85 to 87 percent of the total expenses for the average community college and public four-year institution. For independent colleges and universities, instruction and student services costs comprised around 70 percent of college expenses. According to the report, this was due largely to the fact that independent colleges and universities spent significantly more on financial aid.

Within the category of instruction and student services, the largest single expenditure in most cases was direct instructional expenses, as indicated in Figure 1, “Instruction and Student Services.” For many institutions, this reflected faculty salaries and related benefits, and in all cases the percentage was above fifty percent. The field test

indicated that the main cost drivers at most colleges and universities were the direct educational expense for faculty and the academic services that support instruction (Morley 2002, 34).

#### **4. Conclusion**

Finally, the Conclusion and Observation chapter stated that, "in essentially every instance, the cost of providing an undergraduate education exceeds the full 'sticker' price charged to students and their families in the form of tuition and related fees by anywhere from a few hundred dollars to as much as \$20,000 or more" (Morley 2002, 33). Figure 2 (page 12), entitled, "Total Cost Minus Price" is a graphical representation of the amount of cost incurred by the university above the price paid by the student. For the purposes of this study, the total cost minus price is a subsidy. The graph in Figure 2 shows the distribution of this subsidy. For Community College subsidies, the upper ninetieth percentile subsidy is approximately \$6000, and the lower tenth percentile is around \$4000. Figure 2 illustrates that college costs exceeded college prices in all cases, whether at community colleges, public institutions, or public universities (Morley 2002, 20). The results indicate that tuition does not actually cover the cost of a student's education and that the education is essentially subsidized by some other source.



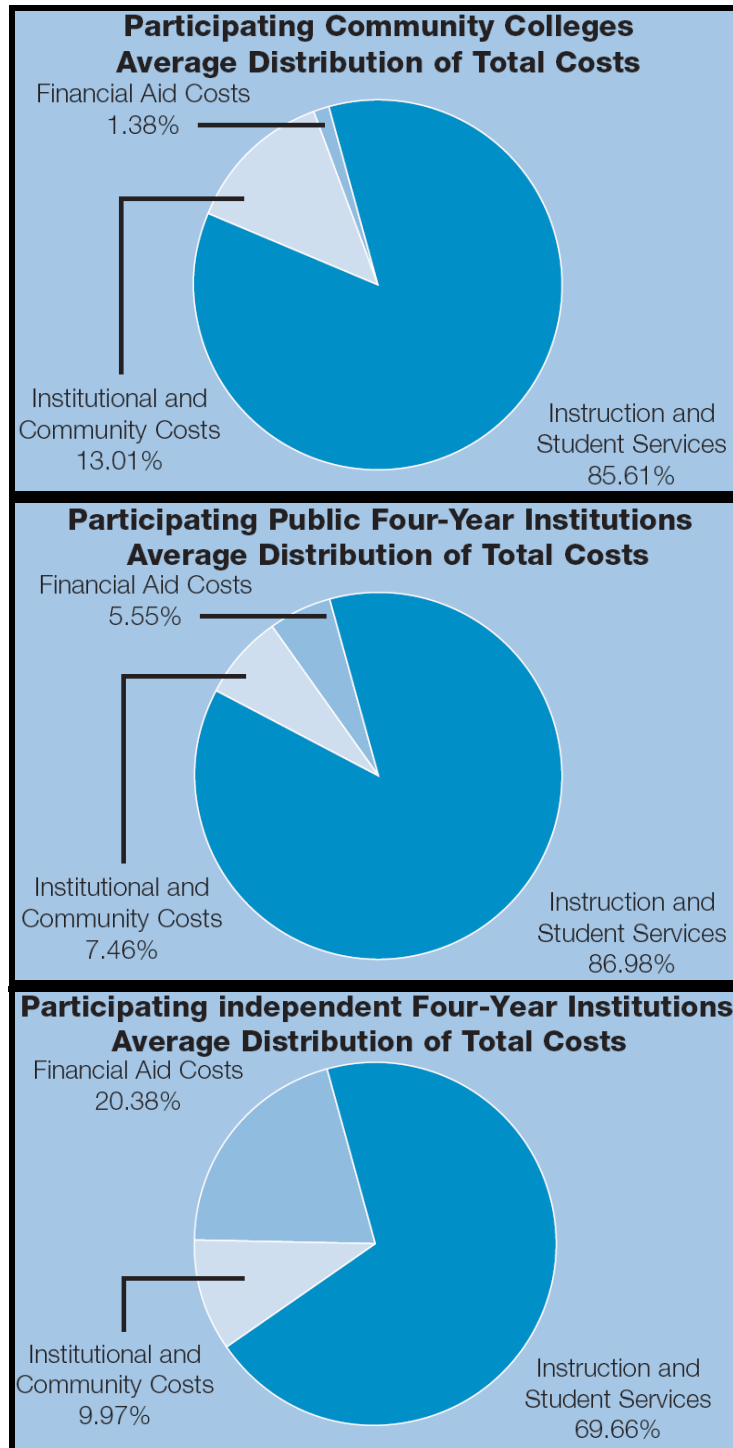


Figure 1. Instruction and Student Services

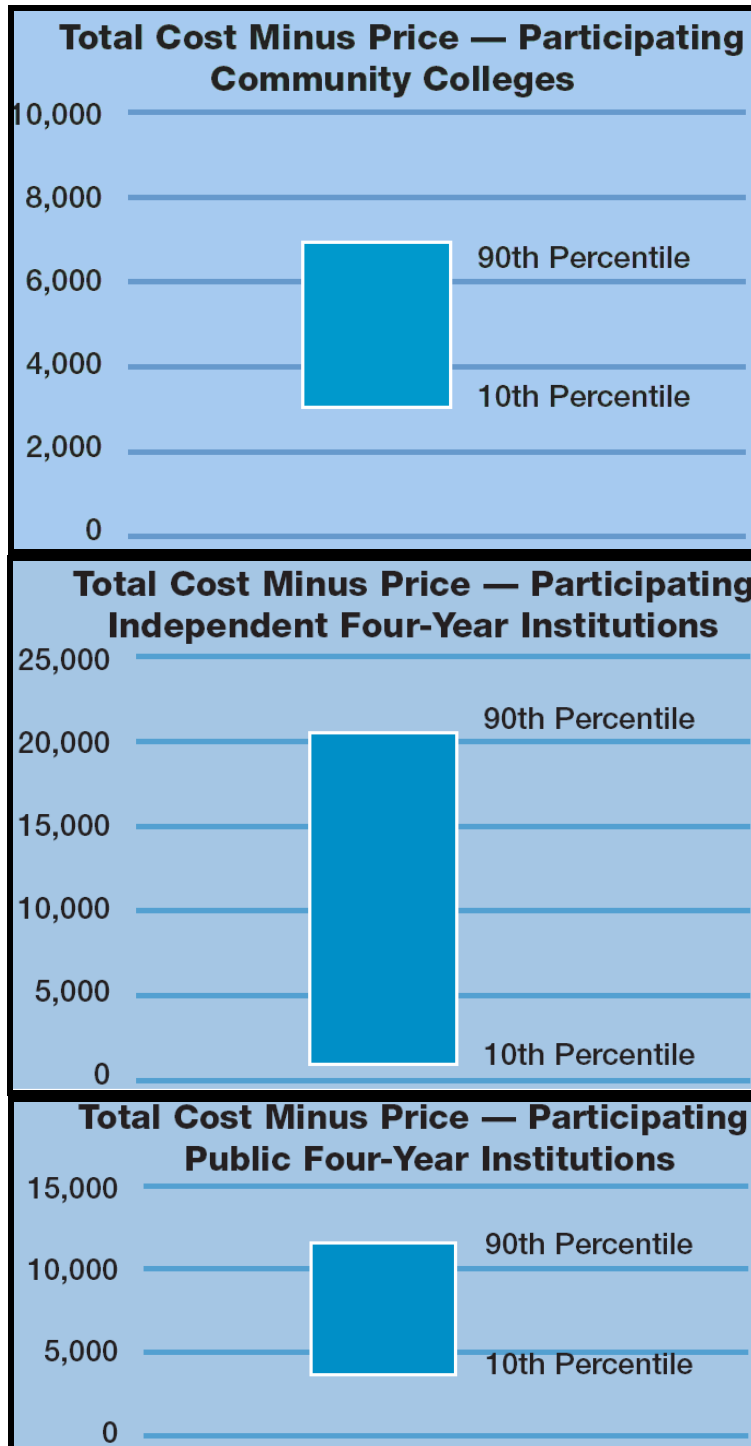


Figure 2. Total Cost Minus Price

### **C. MAKING OPPORTUNITY AFFORDABLE INITIATIVE**

Travis Reindl explains in his article, “HITTING HOME: Quality, Cost, and Access Challenges, Confronting Higher Education Today” that the costs of providing higher education and the prices paid by students and their families have increased substantially (Reindl 2007, 1). He references the ratio of college cost for students versus yearly inflation. After adjusting for inflation, the cost of educating a student has risen 24 percent at four-year public universities over the past five years and 32 percent over the past decade (Reindl 2007, 2). He states that public two-year institutions have done a better job limiting price increases, but their tuition and fees have risen 22 percent in the past decade (Reindl 2007, 2). The article complements the NACUBO ECC Report in that it describes just how much college cost have increased over the past years.

The amount of money that colleges and universities spend to provide education to their students is rising faster than consumer prices and health care costs. Over the past decade, the Higher Education Price Index has increased faster than the nation’s Consumer Price Index. According to data from the Commonfund Institute, the past decade has seen the Higher Education Price Index (HEPI) rise 31 percent, including an 18 percent increase in the last five years alone (Reindl 2007, 3). Meanwhile, the CPI has risen 22 percent and 12 percent, respectively.

Figure 3 demonstrates graphically just how much college costs are rising versus median family income. As shown, new car, prescription drug, and health insurance prices are all outpacing the rise in median family income. However, in all cases, throughout the years shown, college costs are not only rising faster than median family income, but also faster than new car, prescription drug, and health insurance prices. Note for some periods (e.g., 1992 to 1996), public university costs rose faster than private university costs. This chart stands as evidence of how quickly college cost is increasing versus markets such as prescription drug, and health insurance prices.

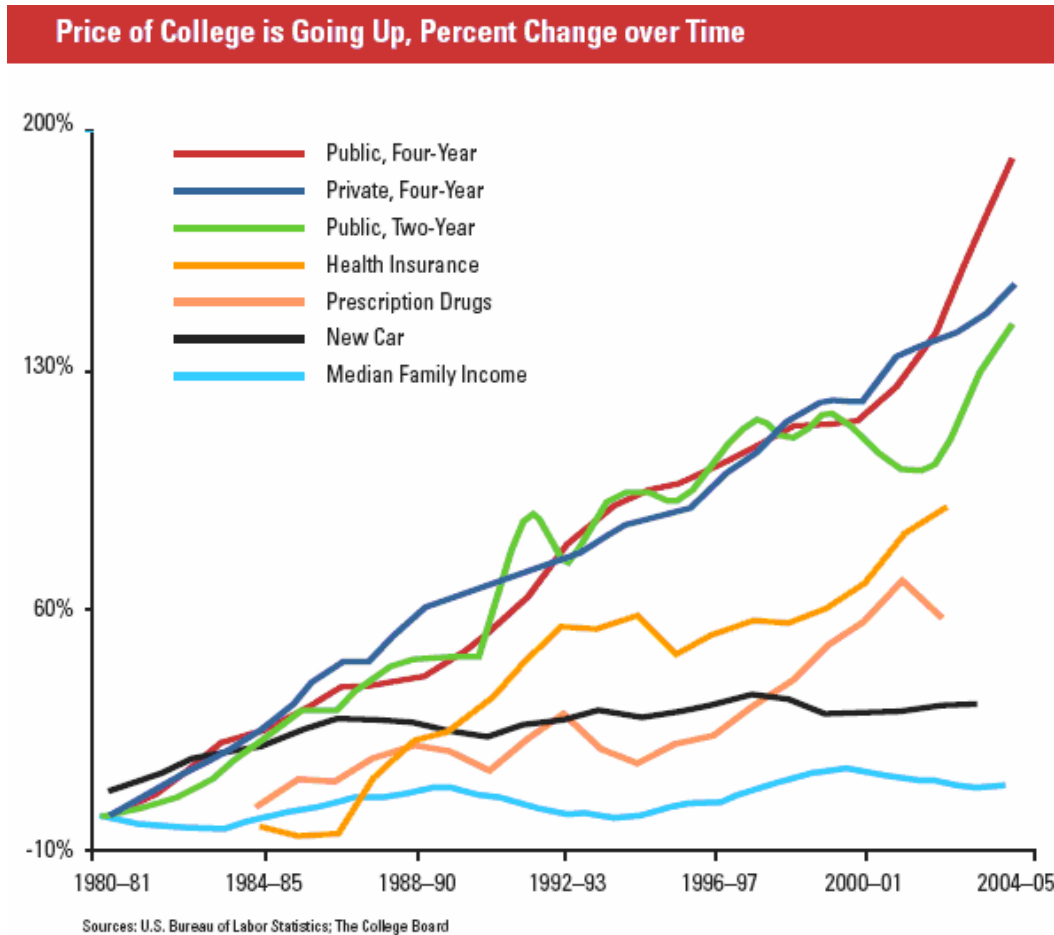


Figure 3. Change in Price of College over Time

However, some experts argue that universities cannot control spending growth because additional funding is always needed to improve quality (Reindl 2007, 3). To control spending growth without diminishing the quality of education, the “Making Opportunity Affordable Initiative” was created. It is designed to provide research, tools and support to help states and institutions transform how they deliver postsecondary education to serve more students without reducing quality. The initiative investigated the patterns of spending in higher education and found evidence that cost increases are in fact not inevitable (Reindl 2007, 3). Institutions can control costs and maintain access and quality if they do a better job of targeting resources to programs that benefit students (Reindl 2007, 3).

Instead of institutions' controlling costs through targeting resources to programs that benefit students, colleges have avoided coming to terms with cost management all together (Reindl 2007, 3). These institutions are seeking additional revenues in the form of private fundraising and student tuition increases. State appropriations for higher education are failing to keep pace with enrollment increases and inflation (Reindl 2007, 3). Legislatures have increased funding for higher education by an average of only 3 percent annually in recent years (Reindl 2007, 3). In a situation such as this, it is understandable that institutions of higher education would turn to private sources of revenue (Reindl 2007, 3). However, private giving is highly variable and cannot be relied on as a budget balancer by higher education (Reindl 2007, 3). This promotes what Charles Miller, chairman of the U.S. Secretary of Education's Commission on the Future of Higher Education, has called "a top-line structure with no real bottom line" (Reindl 2007, 3).

More than two-thirds of Americans believe that colleges and universities could reduce their costs without hurting the quality, according to a 2004 Chronicle of Higher Education poll (Reindl 2007, 3). Many states and institutions do not fully understand why costs are rising, in what areas they are rising, nor what tools or knowledge will help them determine what action to take.

#### **D. COURSE CAPACITY MODULE**

An attempt to answer many of the previous questions may be found in research by Michael H. Granof. He conducted in-depth investigation into applying activity-based costing to a university costing system. The results of his research are found in his paper, "Using Activity-Based Costing to Manage More Effectively" (Granof 2000, 6). He created an ABC system that included a Course Capacity Module. The course capacity module highlighted potential scheduling inefficiencies. The purpose of this module was to calculate the cost of underutilized capacity. This underutilized capacity was the cost of assigning fewer students to a course section than the section was intended to accommodate. To develop this module, each course was categorized by type and assigned

a student capacity. The capacity was based primarily on the “close limits” that individual departments imposed on their own course sections. These capacities were broken into four groups:

- Large lecture course 150 students
- Case course 60 students
- Standard discussion course 40 students
- Seminar 10 students (Granof 2000, 18)

## **1. Method**

For each section, the ratio of the number of students enrolled in the class to total student capacity based on the close limits for that class was calculated. That proportion of the section’s costs was classified as “used capacity.” The remainder of the section’s cost was ascribed to “unused capacity.” This was a measure of the “opportunity costs” of under-enrollment. In certain cases, unused capacity served as a forewarning of questionable policies. An example of this might be permitting faculty to teach two sections of a course when only one section was needed. Classifying unused capacity as an opportunity cost allowed the university to identify and quantify the costs of such questionable policies.

The flow chart in Figure 4 presents the various cost centers and their relationships within the university (Granof 2000, 16). The flow chart illustrates the separation and flow of costs between the academic department costs and the college cost centers. This example of cost categories could be applied to other similar universities.

## Design of ABC Cost Allocation System—Department Level

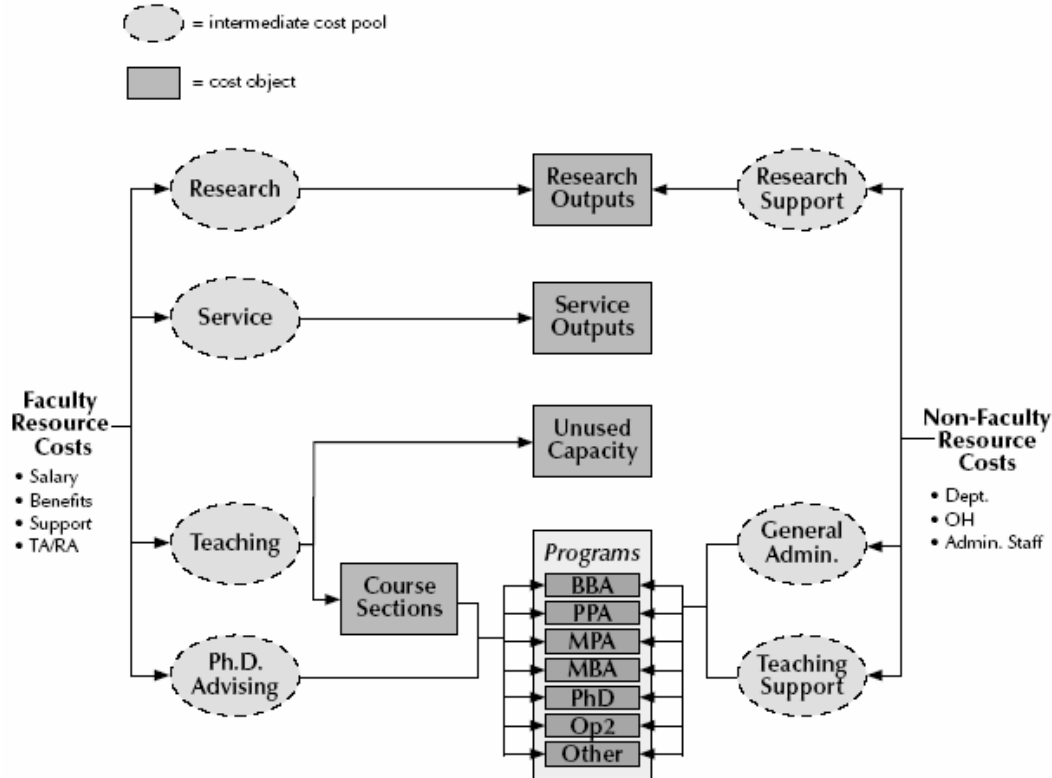


Figure 4. Design of ABC cost allocation system—department level

## 2. Allocation

Rigid allocation rules cannot be readily imposed upon organizations such as universities (Granof 2000, 26). Such organizations are examples of highly decentralized management systems. Instead, Granof developed general guidelines for allocating faculty compensation costs among the three main activities in which faculty engage: teaching, research and service. Exceptions were allowed when the guidelines were inappropriate for individual faculty. Doing so countered criticisms that the allocations were unrealistic. Allowing the exceptions also demonstrated that changes from the model's allocation percentages to alternatives that faculty proposed tended to have little impact on the overall results (Granof 2000, 26). The full cost of courses and programs included a myriad of university-wide costs, such as those of the President's office, admissions and

student services. The study highlighted the cost of scheduling inefficiencies and pointed to the dramatic differences between the resources directed to the Ph.D. students and those directed to the undergraduate students.

Figure 5 illustrates the component activities within the Budget Office and indicates the component activities as they are divided into departmental assets. Departmental values can be summed to provide college-level assessments, and college values summed to provide institutional assessments. The general consensus among administrators and faculty alike was that the analysis provided a new, keener insight into the finances of the university and the constituent units (Swonger Mead 1998, 188).



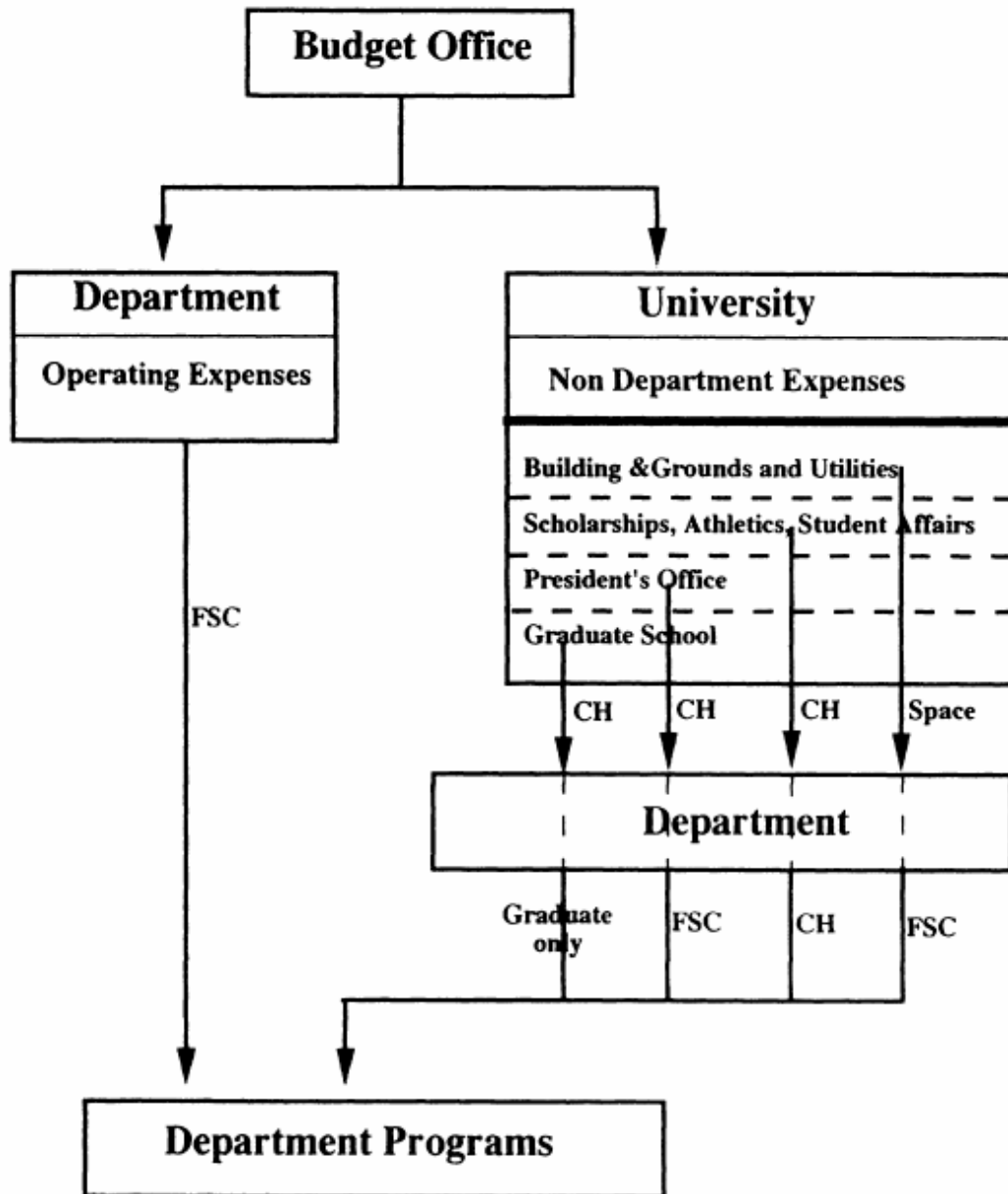


Figure 5. Component activities within the Budget Office

## E. TRENDS IN HIGHER EDUCATION

In their 2005 “Trends in Higher Education Series” the Washington Office of the College Board conducted research relevant to public policy issues in education. Their research provides up-to-date information on tuition and other expenses associated with

attending public and private nonprofit institutions of postsecondary education in the United States. This is accomplished through an Annual Survey that is distributed to more than 3,000 postsecondary institutions across the United States. Information regarding enrollment, admissions, degrees and majors, tuition, financial aid, and other aspects of undergraduate education are recorded (Baum and Payea 2005, 2). Figures 6 through 8 demonstrate actual rates of change for selected aspects of college costs.

Figure 6 separates tuition and fees from room and board and totals both charges. As shown, between 2005 and 2006 tuition and fees have increased by no less than 5.4 percent at two-year and four-year colleges. This applies not only to public colleges, but to private colleges as well. Likewise, room and board has increased no less than 5 percent. Although private university total costs are substantially higher than public university costs, this has had minimal effect on the overall trend of increasing college costs.

Average Published Charges for Undergraduates, 2005-06 (Enrollment-Weighted)

Sector	Tuition and Fees				Room and Board				Total Charges			
	2005-06	2004-05	\$ Change	% Change	2005-06	2004-05	\$ Change	% Change	2005-06	2004-05	\$ Change	% Change
Two-Year Public	\$2,191	\$2,079	\$112	5.4%	*	*	*	*	*	*	*	*
Four-Year Public	\$5,491	\$5,126	\$365	7.1%	\$6,636	\$6,250	\$386	6.2%	\$12,127	\$11,376	\$751	6.6%
Four-Year Private	\$21,235	\$20,045	\$1,190	5.9%	\$7,791	\$7,420	\$371	5.0%	\$29,026	\$27,465	\$1,561	5.7%

Figure 6. Average published charges for undergraduates, 2005-06

As shown in Figure 7, tuition and fees from room and board make up the bulk of college cost, regardless of the type of student enrolled. However, even students who attend more affordable universities can expect that tuition will only cover half of their costs. Room and board and additional overhead costs account for a large burden for these public in-state students.

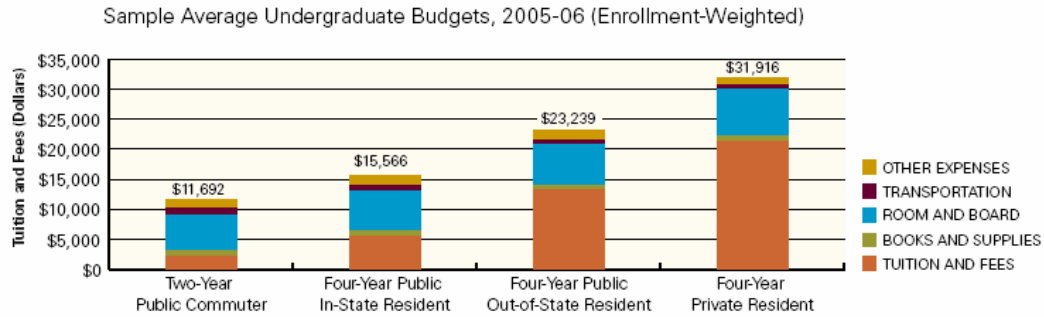


Figure 7. Sample average undergraduate budgets, 2005-06

The price index of goods and services purchased by colleges and universities between the years 1995-2005, as shown in Figure 8, demonstrates the variety of cost increases for each category. Of note are fringe benefits, services, library acquisitions, and professional salaries. The four of these categories rose 200 percent by 2005. This does not address the question of how much added quality is attained through these expenses.

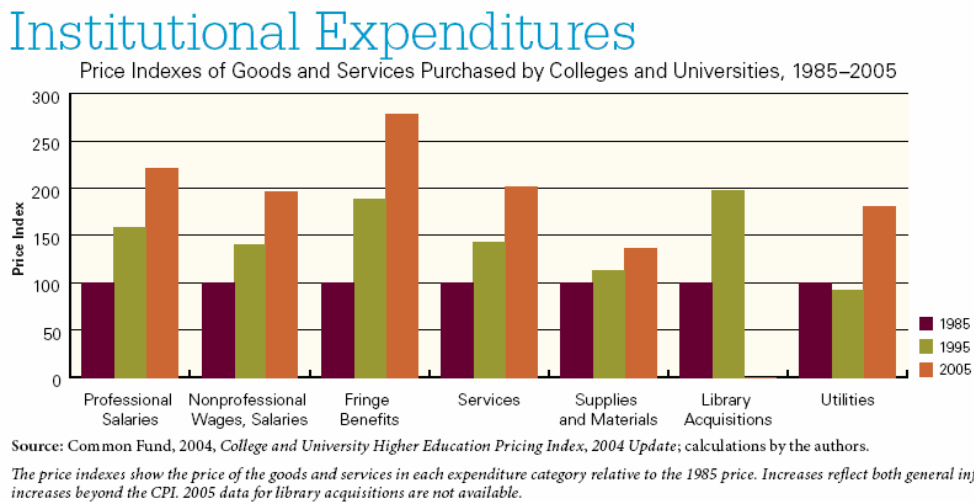


Figure 8. Institutional expenditures

This report determined that engineering programs are the most expensive to offer, averaging \$411 and \$379 per credit hour for civil and mechanical engineering in research universities in 2001. For education courses, research universities spent \$260 per credit hour and baccalaureate colleges spent \$175 in 2001. Average costs for sociology credit hours were \$126 at research universities and \$138 at baccalaureate colleges. The cost per credit hour of computer science courses rose at research universities but declined at

baccalaureate colleges between 1998 and 2001. The cost per credit hour of chemistry courses increased by almost 30 percent in both institutions between 1998 and 2001.

#### **F. SUMMARY**

In conclusion, research shows that the Higher Education Price Index is rising more quickly than the Consumer Price Index. Undergraduate education is becoming more expensive. However, research also indicates that the burden of the cost for universities to provide an undergraduate education actually exceeds the price charged to students.

### **III. NAVAL POSTGRADUATE SCHOOL (NPS)**

#### **A. THE ADMINISTRATIVE “MODEL”<sup>2</sup>**

The current NPS cost structure is incorporated into a computerized model that was created in 2004, based on the prototype that was run by the Graduate School of Business and Public Policy (GSBPP), by order of the Chief of Naval Operations (CNO). Unless otherwise stated, all information within this chapter is derived from the description and documentation of the aforementioned cost structure, “NPS, The Model—Administrative Guide” dated February 2007. This computerized model will be referred to as the “model.”

The intent of the model was to create a technological tool that would standardize financial information with regard to the cost structure and improve the accuracy of the cost structure. As a result, this would create uniformity in regards to institutional costs across the four schools at NPS: the Graduate School of Business & Public Policy, Graduate School of Engineering & Applied Sciences, Graduate School of Operational & Informational Sciences, and School of International Graduate Studies.

##### **1. Intended Tasks**

The model is designed to:

- Track information by curriculum. Information is processed either automatically or manually. Information is processed automatically through the electronic archive of students that includes courses for which students applied, courses actually attended, courses dropped, and other relevant data. Manually processed information consists of data from faculty, including data from the weekly/monthly reports of research advising, academic research, and hours of Ph.D. advising. This information is collected for every faculty member, student, course, curriculum, and school each quarter.

---

<sup>2</sup> NPS, “The Model – Administrative Guide,” all information updated as a working document and the references stated in the present project are dated February 2007.

- Calculate the marginal cost of adding additional students or curricula. The model takes into account actual information of past quarters. Each school has its own idiosyncrasies; hence, the model allows for the marginal costs to differ across the schools.
- Make inferences about capacity utilization rate. The capacity utilization rate accounts for the optimum usage of the current capacity, namely classroom or course capacity. With the capacity utilization rate, the decision maker sets the range of optimum usage in order to achieve desired efficiencies. However, due to budgetary constraints, the administration must adjust the capacity utilization rate to achieve efficiency within the budget structure, bounded by the institutional mission. The efficiency of a school is related to the capacity utilization rate. The more efficient a school is, the less excess there is in capacity utilization. Educational effectiveness could conflict with the efficiency measure. For instance, a school might want to limit enrollment to 17-20 students to achieve educational efficiency. However, the school's classrooms are designed to hold 30 or more students. Thus, there would be excess capacity in classroom utilization; unused space implies inefficient resource usage.
- Organize and simulate cost reduction plans. To assist decision making, the historic and desired information can be simulated to estimate the costs or optimum number of students for each course. This enables the decision maker to estimate the marginal functional cost or the marginal required revenues for the course to take place. The simulation runs 'what-if scenarios' that produce numerical values. In this way, the decision maker can compare between different simulated policies (e.g., more students per section or more sections per course).
- Simulate rate of return on investment. One can view investment as the money spent on the realization and execution of a course, or as the time spent by the instructor for each course. The rate of investment is another metric to compare courses and sections, and to determine the need to introduce new sections of a course. Hence, the simulation provides the decision maker with an additional tool, an instrument to estimate effectiveness.
- Optimize investments. The model can trace variables across the schools and course simulations to establish the optimal point or mix. The decision maker can determine the desired optimal point (e.g., 20 students for each classroom or section) and the simulation results will estimate negative or positive side effects in terms of budgetary costs. These simulation results provide a useful tool for determining the cost and value of variables.

## **2. Model Overview**

The starting point for the model is the number of courses attended by a year-group of students. The model is designed to make inferences from the previous year while holding constant all other variables. For example, the model assumes that a student will attend the same or similar set of courses as a student in the same curriculum the previous year, holding the set of courses for a student constant.

### ***a. Number of Courses Held***

The aforementioned primary assumption provides accurate inferences for future estimation, provided there are no changes in the make-up and number of courses, or curriculum. Since there is no flow of information for the current expenditures related to courses or tracks, the model only considers the actual expenditure of the previous year. Hence, data of previous year's actual expenditure, called 'data of past performance,' becomes the estimation for next year's plan (actual expenditure of year  $n$  equals estimated or planned expenditure for year  $n+1$ ). The model requires only the actual and finalized expenses to be considered. The 'data of past performance' are actual NPS expenditures across courses, curricula, and schools.

### ***b. Direct Teaching Cost***

The model includes three cost drivers from the previous year.

(1) Faculty Salary. It must be noted that the model holds constant the faculty personnel who taught the course, including the salary, rank, and position of the faculty member who taught a course. Therefore, it is assumed that the same professor who taught the course last year ( $n$ ) will also teach it this coming year ( $n+1$ ). Then, when the data is received for year  $n+1$  and the faculty member who actually taught the course is of a different academic rank (e.g., a lecturer), the data incorporated into the model will project for the year  $n+2$  a lecturer instruction cost.

(2) Data of Past Performance. The number of courses held and the number of students that attended each course are included as a driver.

(3) Curriculum Credit Hour/Length of Program. The number of hours required to complete the course and the classroom hours required per week for the course are included as 'data of past performance.' Although the model allows for current data to be considered to assist decision making by the school or the administration for inference purposes, all control variables (specified below) are held constant. In this manner, the inferences would relate to the specific curriculum, track, and school. Using these cost drivers the model estimates the class demand, the required sections, and the faculty cost.

*c. Control Assumptions*

The model of the cost structure is designed as a tool for more efficient decision making. There is some control over the assumptions with the intent to control variables and inputs. The administration or the decision maker can adjust the control assumptions depending on the factors that need to be controlled, either the variables or the inputs. The control assumptions are held constant to refer to the specific data sample (i.e., school, curriculum, track and course) for long-term planning. Namely, the decision maker may be required to identify the capacity utilization rate of a specific resource for a certain number of students. To estimate capacity utilization, the control assumption would be the available resource (quantified) as well as the school, curriculum, tracks, courses and sections held.

As shown by Figure 9, the control assumptions are:

- Number of Sections
- Section Range
- Number of Students Attending
- Faculty Member Salary Factor
- Department and School
- Required Hour for Instruction

These control assumptions can vary to depict the mix that optimizes the efficiency and effectiveness of the decision.



The number of sections and their range (i.e., minimum and maximum number of sections) are two of these assumptions. Each section generates a specific set of demands (e.g., teaching hours, classroom booking, educational material usage) that should be incorporated into the cost of adding (or not) a new section. The section size is usually indicated by the school.

The number of students who actually attend a course (not the number of students who applied for or dropped the course) can also be incorporated as a control assumption. For example, an increase of ten students over the previous year's total number of students within a curriculum presents an additional requirement for which the cost structure must control. This is useful when planning for future years.

The Faculty Member Salary Factor is established, as mentioned above, by the rank and salary of the faculty member who taught the course the previous year. As a control assumption, it can be altered (if known) when the required faculty member to teach the course is of a different rank, so that the cost estimate is closer to the actual cost incurred. Hence, the decision maker can base estimates on the previous year's salary cost or on the proposed actual Direct Teaching Cost to indicate the optimal number of students.

Another control assumption is the origin of students. Since the origin determines the flow of funds into NPS, this assumption is controlled to estimate the optimal student mix and inflow of money. The students could originate from the U.S. Navy, U.S. Army, U.S. Air force, DoD, or from the military services of other countries. That variation of origin generates two issues: the service mix of the student body and the rate of revenue inflow. The service mix affects the revenue flow. As a Navy institution, NPS is directly funded by the Navy's annual budget while, for instance, for an Army student the NPS account will be reimbursed. Thus, the mix is important because it assures the desired balance of student characteristics within a section and influences the timing of funds flow for the current year to NPS.

Finally, the referring department and school is another control assumption. Departments and schools vary in range of research, sources of external funding,

schooling periods, number of faculty members, as well as other factors. Thus they cannot be assessed equally. The model takes these factors into account and, to make inferences, the factors are held constant; namely, the results refer to the initial number of students, courses, faculty member ranking, and institutional hours.

Input Sheet Studs03	Model Sheet Model03	NPSChart Sheet NPSCharts03	CurricChart Sheet CCharts03	
				Make Model
				RunModel NPS
				RunModel Currics
				NPS Charts
				Curric Charts
				Section Size
<b>Parameters</b>				
MaxSectionSize	25	MinSectionRange	6	
MinNumStuds	2	MaxSectionRange	75	
MaxNumStuds	100			
MinNpsStuds	200			
MaxNpsStuds	2500			
SalaryFactor	24			
Zoom	50			
SameScale	TRUE			
<b>NPS Chart Settings</b>	<b>Title</b>	<b>Color</b>	<b>Max Value</b>	
Left Axis	Cost Per Student Credit	DkBlue		
Right Axis	Average Curric Cost	DkGreen		
<b>Curric Chart Settings</b>	<b>Title</b>	<b>Color</b>	<b>Max Value</b>	
Left Axis	Cost Per Student Credit	DkBlue		
Right Axis	Curriculum Cost	DkGreen		
<b>Chart Settings</b>				
USN Color	DkBlue			
DON Color	DkGreen			
DOD Color	Purple			
OTHER Color	Yellow			
INT Color (Total)	Maroon			

Figure 9. A version of control input and variables (from NPS “Administrative Guide”)

#### d. *Instruction Costs*

The instruction cost is calculated on the basis of Student Credit Hour (SCH). SCH Cost is estimated to be one eleventh (1/11) of the professor’s salary plus benefits for a quarter. To account for benefits, the model factors in a 23 percent increase to the salary of the faculty member. The instruction cost equals the Number of Credit Hours actually taught, multiplied by the SCH Cost.

The rest of the control variables that are mentioned above could also be included in the model so that the decision maker can have a relatively complete picture of the costs incurred. Hence, one can run the model, as shown in Figure 10, including all historical data for the school, curriculum, number of students attending, SCH cost by hour and by quarter hours cost, total (by section) hours cost, and the number of U.S. Navy students attending.

School	Course #	Course	2003 Input	SCH Cost @ Current Input	SCH Cost @ Current Input	Course Cost @ Current Input	Naval Students
GSBPP	813	Log-T	4	\$ 108	\$ 14,194	\$ 50,774	4
GSBPP	815	Contract	27	\$ 164	\$ 14,661	\$ 393,154	16
GSBPP	818	Acq. Mgmt	14	\$ 208	\$ 18,071	\$ 252,990	4
GSBPP	818	DSM-I	14	\$ 180	\$ 14,081	\$ 197,137	0
GSBPP	820	REPMID	11	\$ 173	\$ 14,039	\$ 154,424	0
GSBPP	827	Log-M	18	\$ 162	\$ 13,803	\$ 248,458	16
GSBPP	837	FM	40	\$ 164	\$ 14,548	\$ 581,936	34
GSBPP	847	MarP	34	\$ 104	\$ 15,128	\$ 514,340	27
GSBPP	999	Pretend	20	\$ 185	\$ 17,798	\$ 355,923	8
RAFAS	308	SFA	28	\$ 248	\$ 21,801	\$ 813,235	27
GSEAS	372	Meteo	12	\$ 281	\$ 18,024	\$ 216,287	0
GSEAS	373	Metoc	19	\$ 281	\$ 39,930	\$ 758,663	18
GSEAS	440	Ocean	5	\$ 297	\$ 21,803	\$ 109,013	3
GSEAS	525	USW	7	\$ 374	\$ 24,665	\$ 171,954	5
GSEAS	533	Comk Sys	33	\$ 290	\$ 30,977	\$ 1,022,200	20
GSEAS	570	ME	37	\$ 324	\$ 26,850	\$ 993,451	24
RAFAS	590	Plan Sys	51	\$ 308	\$ 28,853	\$ 1,359,312	29
GSEAS	591	Space Sys	15	\$ 244	\$ 31,718	\$ 475,763	14
GSOIS	360	OA	52	\$ 184	\$ 15,858	\$ 814,106	25
GSOIS	381	OL	15	\$ 214	\$ 25,283	\$ 379,242	15
GSOIS	385	C4I	13	\$ 235	\$ 22,101	\$ 287,318	13
GSOIS	386	Space Sys	12	\$ 257	\$ 27,849	\$ 334,182	6
GSOIS	388	Comp Sci	60	\$ 210	\$ 19,032	\$ 1,141,897	27
GSOIS	370	ITM	51	\$ 198	\$ 21,872	\$ 1,115,475	38
GSOIS	399	MOVES	7	\$ 254	\$ 29,845	\$ 208,913	4
GSOIS	595	IW	10	\$ 239	\$ 27,499	\$ 274,987	10
GSOIS	596	IW-I	18	\$ 260	\$ 25,823	\$ 484,816	0
GSOIS	699	SD	43	\$ 201	\$ 16,222	\$ 697,529	3
SIGS	681	Mid East	29	\$ 222	\$ 15,672	\$ 451,595	13
SIGS	682	Far East	21	\$ 226	\$ 16,154	\$ 339,224	12
SIGS	683	West Hem	13	\$ 185	\$ 12,783	\$ 185,918	9
SIGS	684	Rus-Eur	30	\$ 205	\$ 14,710	\$ 441,300	11
SIGS	689	CMR	67	\$ 188	\$ 12,381	\$ 829,533	0
SIGS	824	Reg Intel	3	\$ 207	\$ 16,918	\$ 50,755	3

Figure 10. From NPS Administrative Guide: A comparison across Schools and curriculum.

#### e. Capacity Utilization

Capacity utilization is a key element to account for efficiency. When the number of enrolled students decreases, the SCH Cost increases since there are fewer students taught per section. Capacity utilization decision making data also are based on the SCH normalized to adjust for idiosyncrasies of the departments and schools, as mentioned earlier in the chapter. This is due to the fact that each school, curriculum, and course could have idiosyncrasies or must satisfy sponsor's requirements; hence, the range of students enrolled or attending could vary. For instance, a class of only 6 Human Resources (HR) students is outside the efficiency range of constituting a section, but for some distinct HR courses, there is no other option but to hold the courses with 6 students.

As long as the capacity utilization rate is met, the cost of instruction does not change. Hence, a section might not be full but it is expected to have no increase in the cost of the course, as long as the number of students attending is within the range. Once

the number of students is within the capacity utilization rate, the expense is covered by the revenues incurred because the number of students attending meets the capacity utilization rate.

An illustration of the expected variability of costs related to the number of students actually enrolled is demonstrated in Figure 11. Taking into account actual 2003 data for the entire NPS, the Average Curriculum Cost increases as the number of new students increases, due to the addition of new courses and sections. The Cost per Student Credit Hour represents the section cost divided by the number of students. The Cost per Student Credit Hour decreases asymptotically since the additional students fill the section to their full capacity utilization rate. The point of cost efficiency is located at the level of 1180 students. If there are fewer than 1180 students the 'Cost per Student Credit Hour' decreases asymptotically and the 'Average Curriculum Cost' increases. If there are more than 1180 students the 'Cost of Student Credit Hour' decreases below the 'Average Curriculum Cost'.

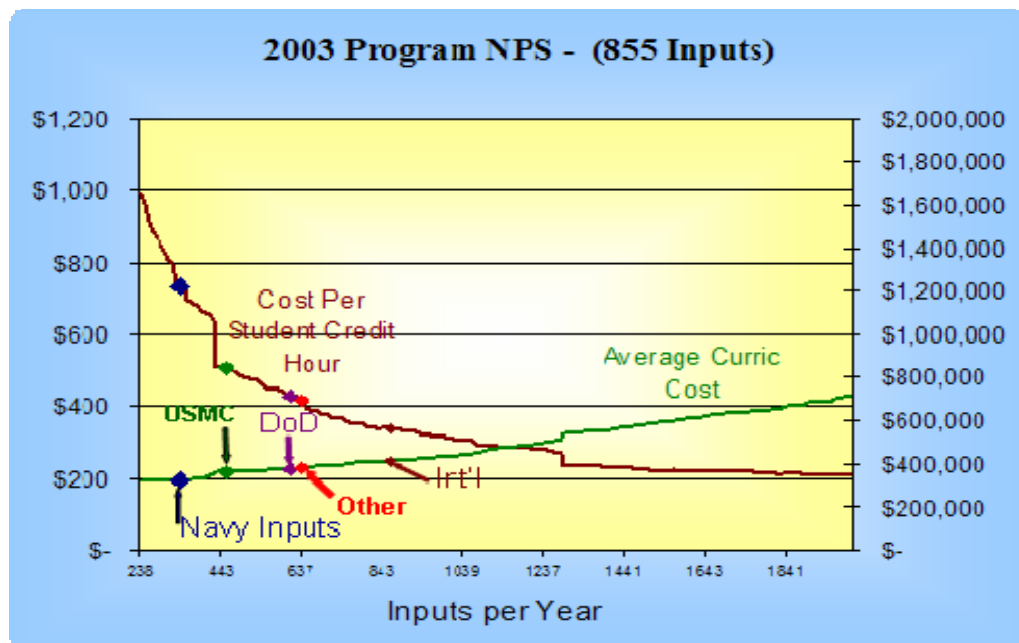


Figure 11. Chart of direct teaching cost (from NPS Administrative Guide)

The administrative decision maker utilizes the inferences from the previous year's capacity utilization rate, and decides which factor will optimize the rate; for example, varying the number of students enrolled or the daily schooling hours could optimize the capacity utilization.

Figure 12 is for the same time period as Figure 11. It presents the actual number of students enrolled at NPS in 2003. As shown in the pie chart, the total capacity consists of nearly 2700 students. The total capacity of 2700 students is derived from the capacity utilization ratio, which is based on the number of offices available to the resident faculty. Out of the 2700 students, there are 1679 resident students and 505 non-resident students. The final number, 516, refers to the excess capacity. The excess capacity consists of the total capacity minus the number of Resident and Non-Resident Students. Although non-resident students are not on campus, office space is utilized by their respective faculty. As a result, excess capacity is reduced not only by an increase of resident student, but also an increase of non-resident students.

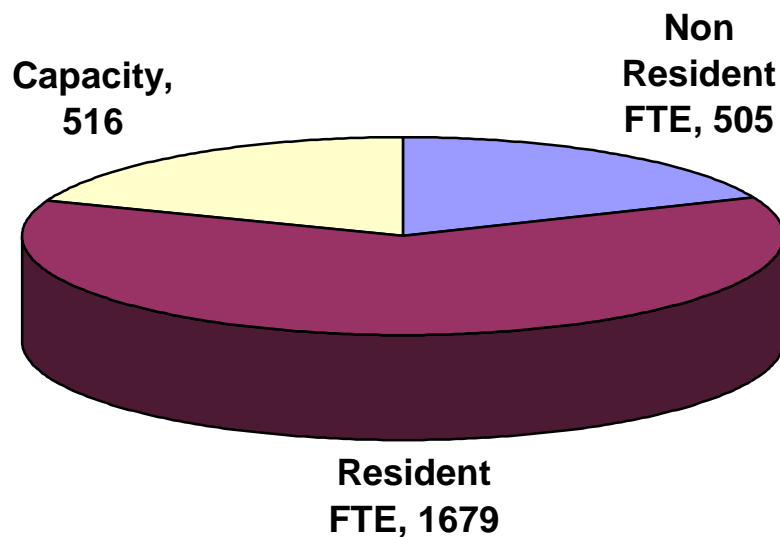


Figure 12. Capacity analysis for 2003 programs (from NPS Administrative Guide)

### **3. Projected Costs**

In order for the administrative body to decide upon educational policy with regard to costs, it uses the departmental projections of courses offerings and monetary requirements, and the number of students attending each school. The students are treated as a source of income. In parallel to the estimations of the preceding modeled cost structure, the departmental projections are taken into account. In recent years, due to the budgetary constraints, the departments are restricted to a set budget as distributed by the Comptroller to meet educational and faculty demands.

The historical NPS data for the years before 2003 are incomplete for the current cost structure. It should be noted that, prior to 2003, the cost incurred in any given year was used to project the next year's cost planning multiplied by the expected number of students; in the current model, cost per student by section is used as a metric.

#### **B. THE DEPARTMENTAL PROJECTIONS**

There are the projected requirements that follow the bottom-up route to the top administration for satisfying budgetary educational needs. Each school manages its own accounts and projects its financing requirements to achieve its educational goals. For the needs of the present project, two evolving departments were approached: the GSBPP<sup>3</sup> (Graduate School of Business and Public Policy) and the CS<sup>4</sup> (Computer Science Department).

All schools have a pre-determined budget to manage, which has been distributed based on the actual past performance of the school and the number of students that attended in the past year. There have been some instances where the budget was increased to meet the current year's demands, but in general the budget is based on data of past performance without taking into account, for example, the increased number of students of the current year.

---

<sup>3</sup> Doug Moses, Senior Associate Dean of GBSPP. Notes from interview held January 23, 2007.

<sup>4</sup> Peter Denning, Chairman of Computer Science Department. Notes from interview held January 30, 2007.

## **1. The Graduate School of Business and Public Policy (GSBPP)**

In determining the cost of a course, NPS distinguishes two types of costs: the cost of development and the cost of delivery.

The cost of development is a one-time cost, but it could occur throughout a quarter. Cost of development is the cost that is incurred when a course has not been taught before or its characteristics are altered. The cost of development includes cost for technical support, developing a syllabus and acquiring all necessary materials to support the faculty member's teaching. It is estimated to amount up to 1/11 of the average annual faculty member's salary.

The delivery cost is calculated, as by the administrative model, on the basis of dividing the work year in 44 parts, since there are 4 quarters in a year and each quarter on average has 11 weeks. The cost is estimated on a quarterly basis, on the number of sections required to be held and the average annual faculty member salary. Therefore, the projected cost for a 4-credit course would be 4/44 of an average annual faculty member salary, while it would be 3/44 of the average salary for a 3-credit course.

## **2. The Computer Science Department (CS)**

The CS department seems to have a constraint that is not monetary. Interestingly, the CS department is constrained heavily by the time factor; there is not enough time to teach all the material or to conduct all the research recommended by the faculty. Therefore, faculty and student time availability must be managed. In practice, the CS department considers time as the primary constraint. Time is the constraint that burdens the school more than any budgetary or cost restrictions.

Additionally, the CS department must 'produce' graduates in an industry in which technological concepts experience a turnover time of 1 year. The requirement for new technology and the technological advancement of education is critical.

The department addresses time availability by subsidizing lecturer held courses with tenure-track professor leave. The CS department executes the cost structure as implemented by the administrative model (top-down execution). The administrative

model has budgetary constraints that restrict acquisition of faculty member time. The question then is how the department addresses the time constraint. To address the time constraint within the budgetary restrictions, CS finances the requirement for additional faculty time by encouraging research leave for the full-tenure faculty members. The tenure track faculty member's salary and benefits are then funded by a research sponsor. The budgeted funds from NPS are released to support the course that faculty member is not available to teach. The course is then taught by a non-tenure track member of the faculty. The actual instructional cost incurred is, thus, less than the budgeted one. This decrease in instructional cost could be sufficient to support multiple sections and courses. In this manner, the CS department exhibits flexibility in managing accounts and curricula. Given the level of research funding in the department, any decrease in institutional budget can be covered in the following year by research funds.

## **C. THE BUDGET**

Any cost structure is influenced by the budget derivation and distribution. NPS is a military institution and as such its budget is influenced by the budgetary restrictions and funding processes of the Federal Government and the DoD.

### **1. Navy Mission Funds**

NPS is funded through Congressional Appropriations (Navy/DoD), the Navy Mission Funds. These funds are appropriated every year, since NPS is authorized by Congress to provide postgraduate educational services for the Navy, Air Force, and Army. These funds are considered direct. For Fiscal Year 2006 (FY 06), these funds accounted for 44.1 percent of total NPS funding (Figure 13).

### **2. Reimbursable Funds**

In addition to the Navy Mission Funds, NPS receives funds in the form of tuition cost charged to the Service of each student participating in any educational program. These funds could be derived from:



- DOD
- Federal or Civilian Source
- Coast Guard
- International Sponsors (FMS or IMET, military or civilian)

Parts of the Reimbursable Funds are identified as Indirect. These funds are a portion of the reimbursements for the research done or short courses delivered by the NPS faculty (e.g., Center of Civil-Military Relations - CCMR, Homeland Security - HLS) to satisfy sponsor requirements. The total Indirect Reimbursable Funds for FY 06 constituted 9.2 percent of the Total Reimbursable Funds and a mere 5.1 percent of the Total NPS Funds.

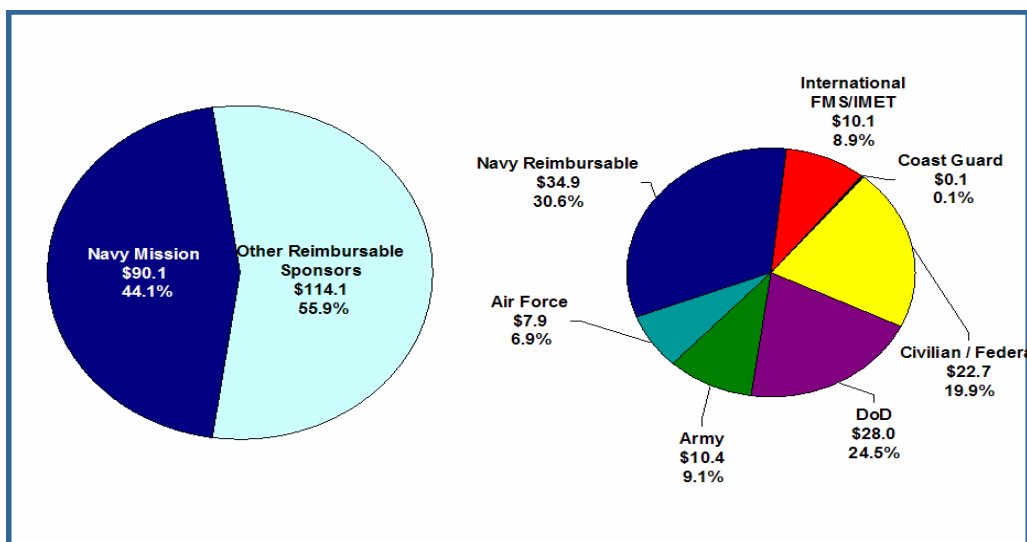


Figure 13. NPS FY 2006 funding sources (From: NPS Command Brief, 2006))

### 3. Other Indirect Costs

There are no other indirect costs to burden the NPS budget since all naval shore installations are supported by Commander Navy Region Southwest (CNRSW). CNRSW coordinates base operating support functions. These include security, family services, bachelor quarters, supply, medical, and logistical concerns for all operating forces

throughout the region. Therefore, all installation management activities are excluded from the NPS budget; this enables the NPS cost structure to focus on an instructional cost model alone.

## **IV. CALIFORNIA STATE UNIVERSITY OF MONTEREY BAY (CSUMB)**

### **A. BUDGETING PRACTICES**

The following section serves as a guideline to the general budgeting practices of the California State University (CSU) and CSUMB.

#### **1. Color of Money**

The CSUMB Budget relies on a “Color of Money” budgetary structure similar to that used by the United States Congress (CSUMB 2006, 4). Once the U.S. Congress authorizes and appropriates money, those funds may be utilized by the appropriate departments. The concept of “Color of Money” is based on US code Title 31 U.S.C. § 1301, which establishes that, “Appropriations shall be applied only to the objects for which the appropriations were made except as otherwise provided by law.” Title 31 U.S.C. § 1301 prohibits the obligation of appropriated funds for purposes other than originally intended by the Congress (Muttu 2002, 23).

Often, Congress places restrictions on how money may be spent to ensure that funds are spent as Congress desires. This technique of classifying funding eliminates the possibility of departments adding and eliminating programs through internal budgeting. Essentially, the “Color of Money” retains budgetary powers with the Congress. With regard to California State University (CSU) and CSUMB, Congress refers to the California State Legislature. Occasionally, university budget planners may have a set of budgetary priorities different from those of the Legislature. For example, the university might decide that funds allocated to the underutilized library may be better allocated to their student theater, or vice versa. In such cases, the university must rely on the Legislature’s direction as requirements of law, not suggested use. CSU and CSUMB are thus required to follow “Color of Money” guidance (CSUMB 2006, 4).

Funds are enacted, defined, and amended by state legislative acts. Most of the funding is established or amended by one-time acts. However, the CSUMB General Fund

is reviewed and updated each year. All funds within CSUMB are state funds and are governed by state laws, requirements, and the policies of the CSU Board of Trustees. The CSU Office of the Chancellor sets CSUMB budgetary policies and procedures of the university (CSUMB 2006, 4).

CSUMB uses incremental budgeting, making yearly adjustments to the previous year's budgets (CSUMB 2006, 19). Additions and deletions to the budget are done for specific purposes. Any supplemental allocations from the Chancellor's Office during fiscal year may be approved for specific purposes. Generally, additions to the budget are based on enrollment growth, not economic inflation (CSUMB 2006, 16). Increases in the number of faculty required as a result of increased Full Time Equivalent Students (FTES) are generally funded first by the Chancellor's Office. Otherwise, mandatory cost increases and pre-commitments are the highest priority.

CSUMB utilizes a division-based decentralized planning process. Divisions have some authority to modify budgets during the year (CSUMB 2006, 20). Divisions may modify budgets through budget transfers, which affect either the fiscal budget of the university or the budget of the division. Divisions may also be modified by supplemental allocations from the Chancellor's Office during the fiscal year. However, in keeping with the "color of money" legislation, budget transfers constitute a base budget modification and require proper authorization.

## **B. TYPES OF FUNDING**

The budget is divided into five categories of funding (CSUMB 2006, 5). Each of the categories of funding serves both general and specific purposes. Therefore, it is not uncommon for these categories to overlap. For example, both the General Fund and the Lottery categories provide funding directly related to classroom instruction. The following is a listing of the funds, followed by a brief explanation of their sources and uses:

Five categories of funding:

- General Fund (governmental)
- Enterprise (proprietary, trust)
- Lottery (fiduciary, trust)
- Capital Outlay (governmental)
- Trust Funds (fiduciary, trust)

## **1. General Fund**

The General Fund consists of appropriation funds generated from State of California taxes (CSUMB 2006, 6). These revenues are appropriated to CSU and are otherwise known as “General Fund Support.” Appropriation Funds are appropriated annually and accounted for by appropriation. Their primary use is to cover the costs of educating students. The General Fund Support allocation from the State of California is supplemented by Student Fees.

Five appropriation years are maintained in the accounting system. The most recent two years are considered active. Unused funds revert to the Chancellor’s Office 1.5 years after July 1 enactment. Two years after July 1 enactment, unused funds revert to the State (CSUMB 2006, 6).

## **2. Enterprise Funds**

These funds consist predominantly of revenues resulting from user fees. Enterprise funds may also consist of funds a governmental body uses to separately account for assets and liabilities to produce a balance sheet (CSUMB 2006, 7). Examples of Enterprise Funds are the Parking Revenue Fund, Dormitory Revenue Fund, and the Extended Education Fund. These funds are also referred to as “auxiliary enterprises” (CSUMB 2006, 7). At CSUMB, auxiliary enterprise also refers to, “The Foundation.” The Foundation is a separate legal entity from CSU, which manages and administers some of the campus auxiliary enterprises.

*a      Foundation Auxiliary Enterprise Funds*

California State University provides certain ancillary services to its campuses, such as CSUMB, through entities known as auxiliary organizations. Auxiliary organizations were created to provide business and instructional support functions not normally funded by the state budget. These auxiliary organizations legally separate CSU from many of the services available on the CSUMB campus. In doing so, CSU is financially separated from these auxiliary organizations, but operationally integrated with many services. These auxiliary organizations are chartered solely for the purpose of performing functions that will contribute to the educational mission of the university. The CSUMB President has oversight and supervisory responsibility over the auxiliary organizations to assure compliance with CSU policies.<sup>5</sup>

Foundation operations and services are integral to campus life, and provide an important source of net revenue to the University's budget. In 2006, the Foundation provided \$1.5M to support the campus budget (06-07 General Fund Budget Development Assessment Rev 2007, 9).

The activities administered by the Foundation include the following:

- Housing and Residential Life program for students living on campus
- Residential housing community for faculty and staff
- Student scholarships, loans, and related student financial assistance
- Support for faculty research, grants, and contracts
- Fund development, including support for alumni programs, fundraising activities, private giving, fund management, public relations and community outreach programs
- Business enterprises, including retail and food services (Bookstore, Otter Bay Café, Dining Commons and vending), Summer Conference Program, leasing, and other projects with revenue-producing potential.

---

<sup>5</sup> CSU, The California State University, <http://www.calstate.edu/FT/auxorg/AuxOrgBackground.shtml> (accessed 06/13/07).

***b. Other Auxiliary Enterprise Funds***

Revenue is collected through various campus activities. For example, parking revenues are collected through parking fees paid by users to park on campus and at special events, and through parking tickets. Expenditures of the Parking Revenue Fund support parking administration, parking lot maintenance, and could be used to construct parking lots or university structures. The Continuing Education Revenue Fund, consist of revenues or fees paid by students to enroll in classes (CSUMB 2006, 8). Expenditures of the Continuing Education Revenue Fund must support Extended Education instruction. The Dormitory Revenue Fund finances construction and renovation projects (CSUMB 2006, 9).

**3. Lottery Fund**

This fund consists of revenues earned from the sale of state lottery tickets (CSUMB 2006, 10). Funding is allocated to CSU annually. Expenditures are restricted by California law to “bona fide educational experiences.” Historically, this funding has been targeted to traditional programs and campus-based programs. The Lottery Fund is intended to supplement the General Fund and funds similar educational expenses.

**4. Capital Outlay**

This funding may be appropriated by the State in an annual budget act or by the sale of bonds by CSU (CSUMB 2006, 11). These funds are used for project-specific buildings. This fund annually supports projects of less than \$400,000, and is allocated as a minor capital outlay.

**5. CSU Trust Fund**

The CSU Trust Fund is the default recordkeeping designation for non-General Fund resources that CSU receives. Funds originally deposited in one of the university’s recognized auxiliary organizations are transferred to the CSU Trust Fund, after which, these funds may be transferred to one of the university’s recognized auxiliary organizations. The CSU Trust Fund consists of funds that do not come from the state, are

not required to be held in the state treasury, but are nonetheless state assets and subject to state rules and regulations (CSUMB 2006, 12). These funds may also include Enterprise Funds, Lottery Funds, and any other funds not originating from the state (CSUMB 2006, 12).

### C. 2006/2007 CSUMB GENERAL FUND CAMPUS BUDGET

The Maddy-Dills statutory fee policy was enacted in 1985. It requires that fee increases be gradual, moderate, and predictable. It also limits fee increases to not more than 10 percent per year. It indicates that fees must be set at least 10 months prior to the fall term, to give students an opportunity to prepare for any changes in fees. In 1993, the CSU Board of Trustees adopted a policy standard of limiting university student's responsibility to one third of the cost of the university expenses. The CSU Board of Trustees indicated that it was the State's responsibility to foster student access to state universities (State Funding and Student Fee Policy SEP 2004).

Included as a source of revenue is the State University Fee of about \$2500 per student. This fee is generally applied to all full-time students enrolled in the university, regardless of program or course load. As shown in Figure 14, CSUMB adds additional fees above the State University Fee. These additional fees include over \$100 in student body fees and nearly \$300 in fees for materials, services, and facilities. The fees charged at CSUMB total more than \$3000, as shown in Figure 14.

State University Fee:	Health Facilities	Health Services	Instructionally Related Activities	Materials, Services, and Facilities	Student Body Assoc.	Student Body Center	Total Mandatory Fees:
2520	0	0	53	291	96	42	3002

6

Figure 14. CSU 2006/07 Academic Year Resident Undergraduate Fees

<sup>6</sup> CSU, California State University, [http://www.calstate.edu/budget/FeeEnrll\\_Info/FeeInfo/Campus\\_Mand\\_Fees/06-07mandfees.pdf](http://www.calstate.edu/budget/FeeEnrll_Info/FeeInfo/Campus_Mand_Fees/06-07mandfees.pdf) (accessed 06/13/07).



As seen in Figure 15, the majority of funding for the university is received through allocated state appropriations. The majority of expenses are faculty salaries, wages, and benefits. In keeping with the Maddy-Dills statutory fee policy of limiting the university students' responsibility to 1/3 of the cost of university expenses, CSUMB raised \$8.9M of revenue from University Fees. This is equal to about 20 percent of the state allocated appropriations, which were \$46.4M. This is well under a third of the total university budget.

REVENUES/SOURCES	05-06 Budget	Additions	06-07 Budget
State Support Appropriation	46,617,600	3,319,490	49,937,090
State University Fees, 3867 FTES Budgeted Enrollment	8,922,838	573,000	9,495,838
Less SUF Reduction for 2006-07 Enrollment Shortfall (-320 FTES)		-866,902	-866,902
Subtotal, SUF	8,922,838	-293,902	8,628,936
Interest Earnings to Offset CA Dept of Finance Charge, Fees in Trust		41,760	41,760
Reimbursement, Auxiliary Audit Assessment		4,100	4,100
Other Student Fees (MSF not included)			
Application Fees	250,000	25,000	275,000
Non-Resident Tuition Fees	341,393	-25,000	316,393
Subtotal, Other Student Fees (MSF not included)	591,393	0	591,393
MSF Fee, GF Portion, 3457 estimated headcount	552,687	30,982	583,669
Less MSF Fee unrealized revenue due to enrollment (-320)		-40,383	-40,383
Subtotal, MSF	552,687	-9,401	543,286
<b>TOTAL, E &amp; G REVENUE</b>	<b>56,684,518</b>	<b>3,062,047</b>	<b>59,746,565</b>
Other Sources: Equipment Leasing Savings		688,414	688,414
<b>TOTAL, REVENUE/SOURCES</b>	<b>56,684,518</b>	<b>3,750,461</b>	<b>60,434,979</b>

Figure 15. 2006/2007 CSUMB General Fund Campus Budget

## 1. Full Time Equivalent Student

The state of California funds CSUMB based on their student enrollment. Forecasts of future student enrollment are left to individual CSU universities. Once enrollment is forecasted for the following school year, a Full Time Equivalent Student (FTES) and Headcount (HC) is generated and funds are appropriated accordingly. During the course of the quarter, appropriated funds based on the forecasted enrollment are adjusted to match actual student enrollment. Accordingly, funding is increased or decreased. Accurate FTES forecasting is important because a poor forecast significantly affects the budget of the ongoing school year.<sup>8</sup>

<sup>7</sup> 06/07 CSUMB General Fund Campus Budget.

<sup>8</sup> Dan Kubiak, Vice-President for Administration and Finance at CSUMB. Notes from interview held March 15, 2007.

Also of note in Figure 15 is the 3867 FTES Budgeted Student Enrollment. As indicated in the Figure 15, due to an enrollment shortfall of 320 students, \$0.9M was deducted from the university's budget. Some other older universities in the California State university system have moved away from dependence on the state of California as a primary source of funding. Instead, they rely on grants and funding from research, contracts, and alumni. Due to CSUMB's dependence on state funding tied to FTES, the number of students attending CSUMB dramatically affects the number of faculty employed by the university.<sup>9</sup>

Apart from student enrollment, any additional resources in the CSUMB Budget are generated by private funding or donations. Because the school has only been in operation since 1994, few of its alumni have financially matured to the point of supporting the school. Unlike many of the well established CSU campuses, CSUMB is more closely constrained by its FTES count for overall funding.<sup>10</sup>

In the "unified across schools model," the FTES serves as benchmarks for funding purposes. Through the FTES benchmarks, CSUMB structures budgets based on forecasted expenditures and revenues. The FTES benchmarks are used in determining the optimum student enrollment (source of funding) while minimizing the necessary number of professors (expenditure), across schools. The relationship between the FTES benchmarks and expenditure serves as the capacity utilization rate. This refers to the ratio of student enrollment to the number of professors. To maximize the capacity utilization rate, student enrollment must be maximized and the number of professors must be minimized.

## **2. General Fund Campus Budget**

Figure 16 (page 47) presents the 2006/2007 CSUMB General Fund Campus Budget. As shown, the budget is divided among eight divisions:

---

<sup>9</sup> Dan Kubiak, Vice-President for Administration and Finance at CSUMB. Notes from interview held March 15, 2007.

<sup>10</sup> Ibid.

- President
- Academic Affairs
- Information Technology
- Student Affairs
- Admin and Finance
- University Advancement
- Campuswide
- Foundation

These divisions are represented by columns in Figure 16. Within each division, the budget is divided into a number of cost categories. These cost categories are listed in the far left column of Figure 16. Regardless of the purpose of each division, each division operates with the same cost categories. As defined in Chapter III, CSUMB also utilizes the “unified across schools model” by using identical cost categories throughout each school and department. The “unified across schools model” institutional cost structure is illustrated in Figures 16 to 18. For instance, both the Information Technology Division and the Student Affairs Division are organized with the identical cost centers as the Academic Affairs Division. This is illustrated in Figure 17 (page 48) and Figure 18 (page 49), in which these categories remain constant. Each division contains sub-divisions, which are also organized with these identical cost categories, down to the lowest departmental tiers of the budget.<sup>11</sup>

The 2006/2007 CSUMB General Fund Campus Budget for the Academic Affairs Division’s College of Arts, Humanities, and Social Sciences (AHSS) is presented in Figure 18. As shown, the budget listing of cost categories is identical to those of the upper tiers of the campus budget shown in Figure 16. Likewise, when the individual subdivisions are divided by department, the standard cost category format is followed.<sup>12</sup>

---

<sup>11</sup> 2006/2007 CSUMB General Fund Campus Budget.

<sup>12</sup> Ibid.

## **D. SOURCES AND USES OF REVENUE**

Mandatory expenses, such as salaries, are paid first. The small amount of discretionary funding available after mandatory costs have been covered is essentially inconsequential to budgetary decisions.<sup>13</sup> This is due primarily to the large ratio of mandatory to discretionary spending.

### **1. Sources of Revenue**

Figure 19 (page 50) shows the 06/07 CSUMB General Fund Campus Budget Sources of Revenue. Allocated State Appropriations are the major source of revenue. The second major source of funding is the State University Fee. As discussed earlier, the magnitude of these revenues depends on student enrollment, or FTES. As illustrated in Figure 19, Non-Resident Tuition and Other Revenue contribute a relatively minor amount (3%) to the CSUMB General Fund Campus Budget.

---

<sup>13</sup> Dan Kubiak, Vice-President for Administration and Finance at CSUMB. Notes from interview held March 15, 2007.

# 2006-2007 General Fund Campus Budget

## SUMMARY BY DIVISION

	President	Academic Affairs	Information Technology	Student Affairs	Admin & Finance	University Advancement	Campuswide	Foundation	Total Budget 2006/07	Total Revised Base Budget 2005/06
<b>BASE EXPENDITURE BUDGET</b>										
<b>I. SALARIES &amp; BENEFITS</b>										
Salaries-Current	492,081	13,730,570	3,349,485	2,955,390	5,278,575	1,431,616	873,944	31,256	28,042,917	28,689,288
Salaries-Moved	-	(215,019)	67,140	339,813	-	-	-	-	191,934	-
Salaries-New Positions	22,908	24,089	20,000	406,127	317,289	-	1,697,083	-	2,487,496	-
Salaries-New, Reclss/Promotions/Equity Adj.	-	80,073	-	4,632	-	-	-	-	84,705	-
<b>Total Salaries</b>	<b>\$14,989</b>	<b>13,619,713</b>	<b>3,336,625</b>	<b>3,705,962</b>	<b>5,595,864</b>	<b>1,431,616</b>	<b>2,571,027</b>	<b>31,256</b>	<b>30,807,052</b>	<b>28,689,288</b>
Benefits for New Salaries (centralized)	-	19,880	7,100	145,818	58,575	-	12,473,671	-	12,473,103	12,456,948
<b>Total Regular Salaries &amp; Benefits</b>	<b>\$14,989</b>	<b>13,639,593</b>	<b>3,343,725</b>	<b>3,851,780</b>	<b>5,654,439</b>	<b>1,431,616</b>	<b>15,044,698</b>	<b>31,256</b>	<b>43,280,155</b>	<b>41,146,236</b>
<b>OTHER EMPL. COSTS</b>										
Part-time Lecturers	-	2,945,696	-	115,142	-	-	-	-	3,060,838	3,051,063
Temporary Help	11,000	135,014	-	90,306	5,000	-	-	-	241,320	272,600
Student Assistants	-	470,112	151,657	209,229	51,795	30,849	-	42,790	956,432	907,942
Overtime	-	4,000	-	5,000	111,256	-	(241,000)	-	(120,744)	45,597
Shift Differential	12,000	1,206	-	-	2,600	-	(77,153)	-	(61,347)	(23,794)
Police Stipends	-	-	28,800	-	29,892	-	-	-	58,692	29,892
Graduate Assistant	-	-	-	10,000	-	-	-	-	10,000	10,000
Benefits (centralized)	-	568	-	-	-	-	-	-	568	-
<b>Subtotal- Other Costs</b>	<b>23,000</b>	<b>3,566,596</b>	<b>180,457</b>	<b>429,677</b>	<b>200,543</b>	<b>30,849</b>	<b>(318,153)</b>	<b>42,790</b>	<b>4,145,759</b>	<b>4,079,900</b>
<b>TOTAL SALARIES AND BENEFITS</b>	<b>\$37,989</b>	<b>17,196,189</b>	<b>3,524,182</b>	<b>4,281,457</b>	<b>5,854,982</b>	<b>1,462,465</b>	<b>14,726,545</b>	<b>74,046</b>	<b>47,425,914</b>	<b>45,226,136</b>
<b>II. OPERATING EXPENSE &amp; EQUIP.</b>										
Supplies	24,750	351,389	34,232	76,403	320,137	18,496	29,000	1,000	855,407	876,619
Employee Relocation	-	44,000	-	-	-	-	-	-	44,000	31,450
Special Events	500	850	-	73,580	-	20,113	-	-	95,043	74,802
Memberships & Subscriptions	11,000	50,354	4,928	12,973	27,058	13,179	31,450	-	150,942	100,352
Advertising & Promotional Publications	400	21,330	300	36,650	11,550	913	-	-	71,143	75,173
Vehicle Usage	500	9,613	9,632	8,034	6,763	50	6,110	-	40,723	69,629
Repairs & Maintenance	1,250	113,663	134,582	21,931	59,453	13,500	-	1,500	345,879	294,682
Fac Recruitment - Campus Interviews	-	10,000	-	-	3,000	-	10,556	-	23,556	13,000
Duprinting	1,500	17,222	2,000	40,197	8,606	35,549	-	-	105,074	69,828
Telephone Usage	3,550	35,138	28,856	21,700	41,520	10,015	-	2,000	142,779	151,761
Postage & Freight	1,100	18,925	1,675	42,300	17,774	16,227	36,750	-	134,751	166,635
Travel In-State	11,000	-	10,384	61,659	53,235	16,455	20,964	-	173,697	164,433
Travel Out-of-State	15,000	-	-	31,492	7,000	8,950	43,375	-	105,817	35,344
Travel In-State Prof Dev	-	-	-	3,414	28,725	500	-	-	32,639	29,225
Travel Out-of-State Prof Dev	-	-	-	1,600	-	-	-	-	1,600	-
Professional Development	-	110,475	51,000	5,240	7,500	5,799	-	-	180,014	175,364
Contractual Svcs	-	159,558	58,397	3,400	1,653,490	-	-	-	1,874,845	1,995,777
Consultants	-	59,094	-	204,995	9,682	-	165,415	-	439,186	264,771
Salary & Wages - Contracted	-	6,500	-	-	500	-	-	-	7,000	17,000
Other Expenses	-	181,440	-	24,011	15,990	-	-	-	221,441	276,774
Campus Initiatives	-	-	-	-	500	-	100,000	-	100,500	144,500
Construction	-	-	-	-	-	-	-	-	-	-
Student Financial Aid	-	-	-	-	-	-	19,000	-	19,000	-
State Univ Grant	-	-	-	-	-	-	2,507,500	-	2,507,500	2,255,200
EOP (SEOG) Grant	-	-	-	-	-	-	293,856	-	293,856	293,856
State Perkins Match	-	-	-	-	-	-	1,700	-	1,700	1,700
Library Collection	-	219,833	-	-	-	-	-	-	219,833	224,833
Program Development	-	-	-	-	1,350	-	-	-	1,350	1,350
CSU Risk Pool Premium	-	-	-	-	-	-	1,434,302	-	1,434,302	1,294,842
Utilities	-	-	-	-	-	-	1,591,114	-	1,591,114	1,517,246
Other (Division Specific O&E)	22,000	(53,327)	532,903	(37,825)	177,205	-	2,062,223	-	2,705,179	3,435,279
<b>TOTAL OPERATING EXPENSE &amp; EQUIP</b>	<b>92,550</b>	<b>1,356,057</b>	<b>868,889</b>	<b>631,774</b>	<b>2,451,038</b>	<b>159,746</b>	<b>8,353,315</b>	<b>4,500</b>	<b>13,917,869</b>	<b>14,051,425</b>
<b>III. FDTN REIMBURSEMENT - SVCS</b>	-	-	(117,072)	(80,066)	(878,055)	-	(498,178)	-	(1,573,371)	(1,514,641)
<b>IV. TOTAL BASE EXPENDITURE BUDGET</b>	<b>630,539</b>	<b>18,552,246</b>	<b>4,275,999</b>	<b>4,833,165</b>	<b>7,427,965</b>	<b>1,622,211</b>	<b>22,581,682</b>	<b>78,546</b>	<b>59,770,412</b>	<b>59,277,561</b>
<b>V. ONE-TIME ALLOCATIONS</b>										
(does not include carryforward )	-	-	-	-	-	-	-	-	-	-
One-time Savings	(23,500)	-	-	-	-	-	-	-	(23,500)	-
Distribution of MSF Fee	-	-	-	482,014	-	58,155	3,117	-	543,286	-
<b>TOTAL ONE-TIME ALLOCATIONS</b>	<b>(23,500)</b>	<b>-</b>	<b>-</b>	<b>482,014</b>	<b>-</b>	<b>58,155</b>	<b>3,117</b>	<b>-</b>	<b>519,786</b>	<b>-</b>
<b>VI. GRAND TOTAL EXPENDITURE BUDGET</b>	<b>607,039</b>	<b>18,552,246</b>	<b>4,275,999</b>	<b>5,315,179</b>	<b>7,427,965</b>	<b>1,680,366</b>	<b>22,584,799</b>	<b>78,546</b>	<b>60,290,198</b>	<b>59,277,561</b>
<b>VII. REIMBURSEMENTS</b>										
Foundation Reimbursement - Other	-	-	-	-	-	-	-	-	-	-
Other Reimbursement	-	-	-	-	-	-	-	-	-	-
<b>TOTAL REIMBURSEMENTS</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>NET TOTAL</b>	<b>607,039</b>	<b>18,552,246</b>	<b>4,275,999</b>	<b>5,315,179</b>	<b>7,427,965</b>	<b>1,680,366</b>	<b>22,584,799</b>	<b>78,546</b>	<b>60,290,198</b>	<b>59,277,561</b>
<b>Memo:</b>										
Centrally Held Benefits on New Positions	-	20,448	7,100	145,818	58,575	-	-	-	-	-
<b>Total Base Budget by Division</b>	<b>607,039</b>	<b>18,531,798</b>	<b>4,268,899</b>	<b>5,169,361</b>	<b>7,369,390</b>	<b>1,680,366</b>	<b>22,584,799</b>	<b>78,546</b>	<b>60,290,198</b>	<b>-</b>

Figure 16. 06/07 Summary By Division  
Source: CSUMB General Fund Campus Budget

**General Fund 2006-2007 Budget  
Academic Affairs  
SUMMARY**

Dept Name:	Provost	CUSP	AHSS	CPS	SMART	Total Budget 2006/07	Total Revised Base Budget 2006/06
<b>BASE EXPENDITURE BUDGET</b>							
<b>I. SALARIES &amp; BENEFITS</b>							
Salaries-Current	3,120,132	1,098,525	3,437,932	2,826,832	3,247,149	13,730,570	13,797,482
Salaries-Moved	(468,495)	21,127	17,254	107,283	107,812	(215,019)	-
Salaries-New Positions	6,276	12,089	-	-	5,724	24,089	-
Salaries-Reclass/Promotions/Equity Adj.	78,645	-	1,428	-	-	80,073	-
<b>Total Salaries</b>	<b>2,736,558</b>	<b>1,131,741</b>	<b>3,456,614</b>	<b>2,934,115</b>	<b>3,360,685</b>	<b>13,619,713</b>	<b>13,797,482</b>
Benefits for New Salaries (centralized)	13,049	4,292	507	-	2,032	19,880	-
<b>Total Regular Salaries &amp; Benefits</b>	<b>2,749,607</b>	<b>1,136,033</b>	<b>3,457,121</b>	<b>2,934,115</b>	<b>3,362,717</b>	<b>13,639,593</b>	<b>13,797,482</b>
<b>OTHER EMPL. COSTS</b>							
Part-time Lecturers	2,767,360	113,336	-	30,000	35,000	2,945,696	2,904,256
Temporary Help	15,753	47,280	3,738	11,380	56,863	135,014	138,481
Student Assistants	70,734	190,980	92,366	19,600	96,432	470,112	445,162
Overtime	-	-	-	-	4,000	4,000	-
Shift Differential	1,206	-	-	-	-	1,206	1,206
Police Stipends	-	-	-	-	-	-	-
Graduate Assistant	-	-	-	-	-	-	-
Benefits (centralized)	568	-	-	-	-	568	-
<b>Subtotal-Other Costs</b>	<b>2,855,621</b>	<b>351,596</b>	<b>96,104</b>	<b>60,980</b>	<b>192,295</b>	<b>3,556,596</b>	<b>3,489,105</b>
<b>TOTAL SALARIES AND BENEFITS</b>	<b>5,605,228</b>	<b>1,487,629</b>	<b>3,553,225</b>	<b>2,995,095</b>	<b>3,555,012</b>	<b>17,196,189</b>	<b>17,286,587</b>
<b>II. OPERATING EXPENSE &amp; EQUIP:</b>							
Supplies	96,417	25,178	69,856	52,719	107,219	351,389	396,316
Employee Relocation	44,000	-	-	-	-	44,000	-
Special Events	100	-	-	750	-	850	3,850
Memberships & Subscriptions	38,370	400	1,254	8,000	2,330	50,354	37,359
Advertising & Promotional Publications	16,500	1,600	1,990	500	740	21,330	15,830
Vehicle Usage	330	-	200	6,083	3,000	9,613	32,193
Repairs & Maintenance	21,710	13,267	30,846	20,490	27,350	113,663	129,713
Fac Recruitment - Campus Interviews	10,000	-	-	-	-	10,000	10,000
Dup-printing	5,000	2,743	3,329	3,700	2,450	17,222	17,072
Telephone Usage	11,295	4,846	4,417	8,090	6,490	35,138	43,506
Postage & Freight	7,750	1,125	2,695	4,650	2,705	18,925	20,283
Travel In-State	-	-	-	-	-	-	-
Travel Out-of-State	-	-	-	-	-	-	-
Travel In-State Prof Dev	-	-	-	-	-	-	-
Travel Out-of-State Prof Dev	-	-	-	-	-	-	-
Professional Development	110,475	-	-	-	-	110,475	110,475
Contractual Svcs	41,821	-	-	5,937	111,800	159,558	152,014
Consultants	11,000	4,000	19,194	24,900	-	59,094	64,339
Salary & Wages - Contracted	-	-	6,500	-	-	6,500	6,500
Other Expenses	121,690	-	-	-	59,750	181,440	215,690
Campus Initiatives	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-
Student Financial Aid	-	-	-	-	-	-	-
State Univ Grant	-	-	-	-	-	-	-
EOP (SEOG) Grant	-	-	-	-	-	-	-
State Perkins Match	-	-	-	-	-	-	-
Library Collection	219,833	-	-	-	-	219,833	219,833
Program Development	-	-	-	-	-	-	-
CSU Risk Pool Premium	-	-	-	-	-	-	-
Utilities	-	-	-	-	-	-	-
Other	(75,000)	8,673	-	13,000	-	(53,327)	(40,017)
<b>TOTAL OPERATING EXPENSE &amp; EQUIP</b>	<b>681,291</b>	<b>61,832</b>	<b>140,281</b>	<b>148,819</b>	<b>323,834</b>	<b>1,356,087</b>	<b>1,434,956</b>
<b>III. FDTN REIMBURSEMENT - SVCS</b>	-	-	-	-	-	-	(64,092)
<b>IV. TOTAL BASE EXPENDITURE BUDGET</b>	<b>6,286,519</b>	<b>1,549,461</b>	<b>3,693,506</b>	<b>3,143,914</b>	<b>3,878,846</b>	<b>18,552,246</b>	<b>18,657,451</b>
<b>V. ONE-TIME ALLOCATIONS</b>							
(does not include carryforward)	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
<b>TOTAL ONE-TIME ALLOCATIONS</b>	-	-	-	-	-	-	-
<b>VI. GRAND TOTAL EXPENDITURE BUDGET</b>	<b>6,286,519</b>	<b>1,549,461</b>	<b>3,693,506</b>	<b>3,143,914</b>	<b>3,878,846</b>	<b>18,552,246</b>	<b>18,657,451</b>
<b>VII. REIMBURSEMENTS</b>							
Foundation Reimbursement - Other	-	-	-	-	-	-	-
Other Reimbursement	-	-	-	-	-	-	-
<b>TOTAL REIMBURSEMENTS</b>	-	-	-	-	-	-	-
<b>NET TOTAL</b>	<b>6,286,519</b>	<b>1,549,461</b>	<b>3,693,506</b>	<b>3,143,914</b>	<b>3,878,846</b>	<b>18,552,246</b>	<b>18,657,451</b>
Centrally Held Benefits on New Positions	-	-	-	-	-	20,448	-
						<b>18,531,798</b>	

Figure 17. 06/07 Academic Affairs  
Source: CSUMB General Fund Campus Budget

2006-07 General Fund Budget Request  
ACADEMIC AFFAIRS  
AHSS

Dept Name:	Art, Humanities & Social Sci.	Integrated Studies Special Major Prog	Social, Behavioral & Global Studies	Visual & Public Arts	Humanities & Communications	World Languages & Cultures	Music & Performing Arts	Total Proposed Budget	Total Revised Base Budget
Dept ID:	1009	1040	1126	1064	1037	1069	1046	2006/07	2005/06
<b>BASE EXPENDITURE BUDGET</b>									
<b>I. SALARIES &amp; BENEFITS</b>									
Salaries-Current	275,160	-	990,739	327,258	1,143,909	448,609	252,257	3,437,932	3,437,932
Salaries-Jobred	(70,882)	-	-	(339)	9,048	79,066	361	17,254	-
Salaries-New Positions	-	-	-	-	-	-	-	-	-
Salaries-Reclass./Promotions/Equity Adj.	-	-	1,428	-	-	-	-	1,428	-
<b>Total Salaries</b>	<b>204,278</b>	<b>-</b>	<b>992,167</b>	<b>326,919</b>	<b>1,152,957</b>	<b>527,675</b>	<b>252,618</b>	<b>3,456,614</b>	<b>3,437,932</b>
Benefits for New Salaries (centralized)	-	-	507	-	-	-	-	507	-
<b>Total Regular Salaries &amp; Benefits</b>	<b>204,278</b>	<b>-</b>	<b>992,674</b>	<b>326,919</b>	<b>1,152,957</b>	<b>527,675</b>	<b>252,618</b>	<b>3,457,121</b>	<b>3,437,932</b>
<b>OTHER EMPL. COSTS</b>									
Part-time Lecturers	-	-	-	-	-	-	-	-	-
Temporary Help	-	-	-	-	-	-	-	-	-
Student Assistants	13,260	3,300	22,339	9,053	4,800	31,114	8,500	92,366	94,301
Overtime	-	-	-	-	-	-	-	-	-
Shift Differential	-	-	-	-	-	-	-	-	-
Police Stipends	-	-	-	-	-	-	-	-	-
Graduate Assistant	-	-	-	-	-	-	-	-	-
Benefits (centralized)	-	-	-	-	-	-	-	-	-
<b>Subtotal- Other Costs</b>	<b>13,260</b>	<b>3,300</b>	<b>22,339</b>	<b>9,053</b>	<b>4,800</b>	<b>31,114</b>	<b>12,238</b>	<b>96,104</b>	<b>98,039</b>
<b>TOTAL SALARIES AND BENEFITS</b>	<b>217,538</b>	<b>3,300</b>	<b>1,015,013</b>	<b>335,972</b>	<b>1,157,757</b>	<b>558,789</b>	<b>264,856</b>	<b>3,553,225</b>	<b>3,535,971</b>
<b>II. OPERATING EXPENSE &amp; EQUIP:</b>									
Supplies	18,545	2,665	19,086	8,000	7,390	8,670	5,500	69,856	69,656
Employee Relocation	-	-	-	-	-	-	-	-	-
Special Events	-	-	-	-	-	-	-	-	-
Memberships & Subscriptions	500	400	-	-	-	-	354	1,254	1,254
Advertising & Promotional Publications	-	-	-	500	-	-	1,490	1,990	1,990
Vehicle Usage	-	-	200	-	-	-	-	200	200
Repairs & Maintenance	5,000	-	3,100	3,000	10,000	5,000	4,746	30,846	29,846
Fac Recruitment -Campus Interviews	-	-	-	-	-	-	-	-	-
Duplicating	300	300	1,229	1,000	-	-	500	3,329	3,329
Telephone Usage	250	100	1,800	887	500	680	200	4,417	4,417
Postage & Freight	100	100	800	175	400	620	500	2,695	2,395
Travel In-State	-	-	-	-	-	-	-	-	-
Travel Out-of-State	-	-	-	-	-	-	-	-	-
Travel In-State Prof Dev	-	-	-	-	-	-	-	-	-
Travel Out-of-State Prof Dev	-	-	-	-	-	-	-	-	-
Professional Development	-	-	-	-	-	-	-	-	-
Contractual Svcs	-	-	-	-	-	-	-	-	-
Contracts	4,000	-	-	7,694	2,000	2,000	3,500	19,194	20,694
Salary & Wages - Contracted	6,500	-	-	-	-	-	-	6,500	6,500
Other Expenses	-	-	-	-	-	-	-	-	-
Campus Initiatives	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-
Student Financial Aid	-	-	-	-	-	-	-	-	-
State Univ Grant	-	-	-	-	-	-	-	-	-
EOP (SEOG) Grant	-	-	-	-	-	-	-	-	-
State Perkins Match	-	-	-	-	-	-	-	-	-
Library Collection	-	-	-	-	-	-	-	-	-
Program Development	-	-	-	-	-	-	-	-	-
CSU Risk Pool Premium	-	-	-	-	-	-	-	-	-
Utilities	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-
<b>TOTAL OPERATING EXPENSE &amp; EQUIP</b>	<b>35,195</b>	<b>3,565</b>	<b>26,215</b>	<b>21,266</b>	<b>20,290</b>	<b>16,970</b>	<b>16,790</b>	<b>140,281</b>	<b>140,281</b>
<b>III. FDTN REIMBURSEMENT - SVCS</b>	-	-	-	-	-	-	-	-	-
<b>IV. TOTAL BASE EXPENDITURE BUDGET</b>	<b>252,733</b>	<b>6,865</b>	<b>1,041,228</b>	<b>357,238</b>	<b>1,178,047</b>	<b>575,759</b>	<b>281,646</b>	<b>3,693,506</b>	<b>3,676,252</b>
<b>V. ONE-TIME ALLOCATIONS</b>									
<i>(does not include carryforward)</i>	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
<b>TOTAL ONE-TIME ALLOCATIONS</b>	-	-	-	-	-	-	-	-	-
<b>VI. GRAND TOTAL EXPENDITURE BUDGET</b>	<b>252,733</b>	<b>6,865</b>	<b>1,041,228</b>	<b>357,238</b>	<b>1,178,047</b>	<b>575,759</b>	<b>281,646</b>	<b>3,693,506</b>	<b>3,676,252</b>
<b>VII. REIMBURSEMENTS</b>									
Foundation Reimbursement - Other	-	-	-	-	-	-	-	-	-
Other Reimbursement	-	-	-	-	-	-	-	-	-
<b>TOTAL REIMBURSEMENTS</b>	-	-	-	-	-	-	-	-	-

Figure 18. 06/07 College of Arts, Humanities, and Social Sciences(AHSS)  
Source: CSUMB General Fund Campus Budget

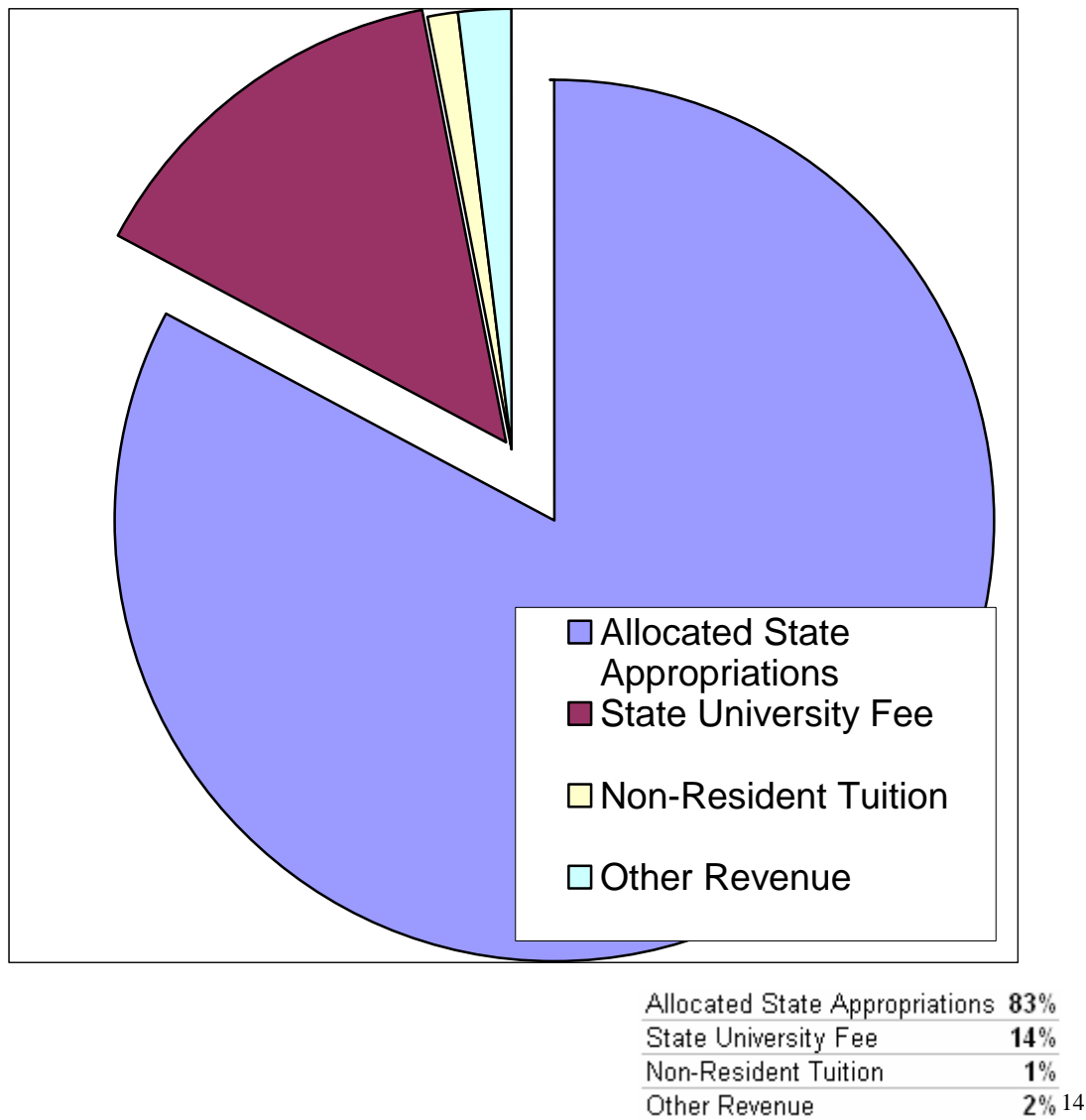


Figure 19. 06/07 CSUMB General Fund Campus Budget-Sources of Revenue<sup>15</sup>

<sup>14</sup> 06/07 CSUMB General Fund Campus Budget.

<sup>15</sup> Ibid.

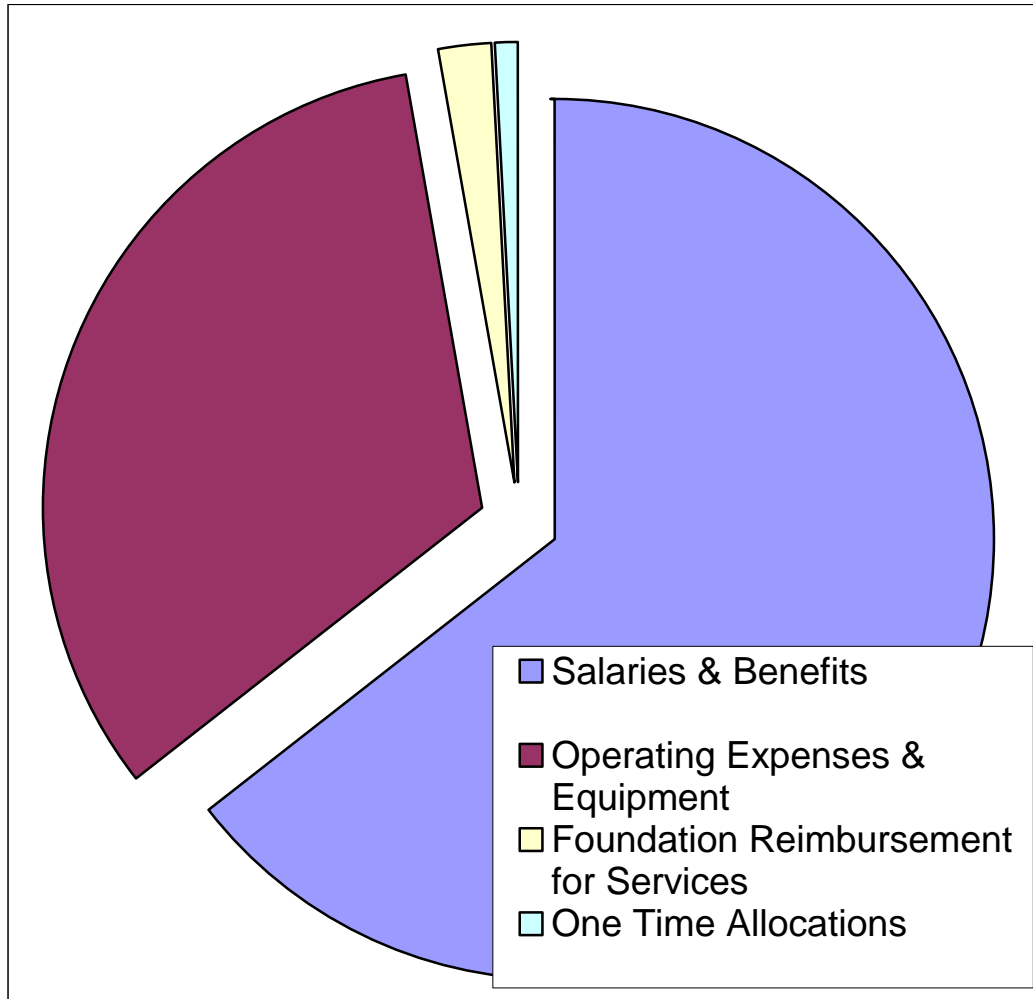


## **2. Uses of Revenue**

As shown in Figure 20, Salaries and Benefits constitute the majority of the budgeted expense. The second largest chunk of the budget consists of Operating Expenses and Equipment. Similar to the Salaries and Benefits expenses, many of the costs within this category are mandatory costs. Operating Expenses and Equipment includes many long-term contractual agreements that cannot be modified. Additionally, other expenses within the cost category of Operating Expenses vary with fuel prices, yearly price increases, and inflation.

## **E. CONCLUSION**

Figure 21 (page 53) shows the percentage use and sources of revenue to the CSUMB General Fund Campus Budget, as well as actual amounts of revenues and expenses for the entire university. As indicated, CSUMB is nearly totally dependent on state funding to operate. Out of State Tuition and Other Revenue constitute less than 5 percent of CSUMB's total sources of revenue. Student enrollment plays a critical role in CSUMB's ability to increase the numbers of professors and programs. If the number of students were to drop significantly, so too would the university's budget.



Salaries & Benefits	67%
Operating Expenses & Equipment	34%
Foundation Reimbursement for Services	-2%
One Time Allocations	1%

16

Figure 20. 06/07 CSUMB General Fund Campus Budget-Uses of Revenue<sup>17</sup>

<sup>16</sup> 06/07 CSUMB General Fund Campus Budget.

<sup>17</sup> Ibid.

<b>2006/07 CSUMB Budget:</b>		
<b><i>Sources</i></b>		
Allocated State Appropriations	\$ 49,937,090	<b>83%</b>
State University Fee	8,628,936	<b>14%</b>
Non-Resident Tuition	591,393	<b>1%</b>
Other Revenue	1,231,700	<b>2%</b>
<b><i>Total Sources of Revenue:</i></b>	<b>\$ 60,389,119</b>	
<b><i>Uses</i></b>		
Salaries & Benefits	\$ 45,226,136	<b>67%</b>
Operating Expenses & Equipment	23,043,244	<b>34%</b>
Foundation Reimbursement for Services	(1,514,641)	<b>-2%</b>
One Time Allocations	519,786	<b>1%</b>
<b><i>Total Uses of Revenue:</i></b>	<b>\$ 67,274,525</b>	

Figure 21. 06/07 CSUMB General Fund Campus Budget<sup>18</sup>

<sup>18</sup> 06/07 CSUMB General Fund Campus Budget.

THIS PAGE INTENTIONALLY LEFT BLANK

## **V. ANALYSIS, DISCUSSION, AND CONCLUSIONS**

### **A. INTRODUCTION**

The cost structure of an institution is indicative of the management philosophy of the institution; the cost structure incorporates constraints that bound the institution and its agencies. As an educational institution, any institution of higher education prioritizes its needs within these constraints from a qualitative aspect: knowledge dissemination. As in any industry, an educational institution faces competition and must address market requirements, federal constraints, and sponsors' needs. Competition is critical, because educational institutions are ranked and also required to meet external standards. Performance pressure is incorporated into the decision making to affect the desired status of a school/department and the overall institutional ranking. Hence, the decision maker has dynamic constraints and boundaries, set by external sources.

Institutions of higher education, given the intangible nature of both the products and the processes to develop their products, have difficulty in comprehending the value of tracking costs to specific activities. The faculty members of institutions of higher education do not adopt a cost tracking mentality since it seems somewhat irrelevant to knowledge dissemination. Given this environment, a "unified across schools model" may reveal costs that represent inefficiencies in the institution's budget. By examining the cost structure, the relative value of the constraints placed on schools and departments of the institutions might be assessed.

### **B. COMMON GROUND**

From the chapter that examined the situation at NPS, the evidence indicates that the introduction of a "unified across schools model" is a new policy. Traditionally, the budget expenditure of the previous year was projected as the current year's planned requirement by both schools. This new policy of a "unified across schools model" has been introduced for various reasons, but its aim is to reveal costs that represent inefficiencies in the institution's budget.

However, the priority of the decision maker is the flow of money, not efficiencies per se. The required reports from the departments capture departmental expenditures, but do not include the necessary information to identify the relative efficiency of the expenditure. Thus, the decision maker cannot prioritize departments' expenditures with regard to relative efficiencies. Opportunity cost, alternative investments, and prioritized needs are not considered in a "unified across schools model."

Furthermore, certain categories captured by the cost structure are not always detailed. Instructional cost may be segmented between schools or departments, but other costs are not. For example, the burden of the library cost is shared equally, as an overhead cost, irrespective of actual use by curriculum or school.

Additionally, at CSUMB and NPS, there are areas such as building maintenance, housing, and parking that are not included in the institutions of higher education's budget and as such are not part of the cost structure. Because these figures are not captured, statistical trends are not recorded. Without these statistical trends, the benefit to the student of such services and the cost incurred by every additional student, are not traced. The benefit and the cost are important in depicting how much investment is necessary for each student in a particular curriculum.

Moreover, expenditures for categories such as classroom maintenance, equipment purchase, and general maintenance, are compiled as generic support costs. Treating costs in this manner creates cross subsidies. The cost of a student is the burdened with a disproportionate cost of 'product' and supportive 'products.'

According to Twigg (1999, 23), the non-resident student subsidizes "20 percent" of the resident student's usage of such costs as the auditorium, parking facilities, the library, or building maintenance. Both the non-resident and resident student should be burdened for the proportionate cost of 'product' and supportive 'products.'

Another similarity between CSUMB's and NPS' cost structure is the capacity utilization ratio. At the time of this research, both institutions of higher education calculated a capacity utilization ratio, albeit with different titles and formula, without

strictly applying the efficient optimization point to the “unified across schools model.” The models are fairly new and will require time to implement completely, given that there is limited historical data.

The generation of funding for course offerings is another common ground for the two institutions, for at least two reasons. First, the source of funding dictates at least some of the decision makers’ policies. Second, the market indicates the course demand. Hence, both institutions operate under budgetary and market constraints that influence policy.

It should be noted that the cost structure model is held and controlled by the administration of both institutions. The departments, schools, and support offices (i.e., agencies) do not have direct access to the model. As a result, these agencies do not comprehend the complexity of the data required to construct the cost structure. These agencies are reluctant to provide information into a system in which they do not understand how the information will be used.

### **C. BUDGET POLICY FACTOR**

The present research demonstrated that the cost structures of the two schools included in this research are historically tied to the budget inflow and outflow. The budget is a source of funding, a constraint, and a policy indicator. For instance, once budget cuts are passed to the agencies, they view as a constraining instrument of policy enforcement. Lacking the necessary cost accounting structure makes it difficult for the agencies to locate inefficiencies, or identify opportunity losses. The agencies do not have the cost accounting structure available to re-evaluate their situation, to generate alternative solutions, or run scenarios that comply with the budget restrictions.

The cost structure serves as a means of financial policy enforcement. For example, when introducing a new course, the agencies must plan for a one time occurring cost (as mentioned in Chapter III) such as the material, preparation, books, and supportive presentations for that course. The cost structure does not account for the one-time costs. Thus, the school receives a budget in accordance with historical data, not through the estimated cost of a new course. The costs not covered by the administration

will be absorbed by the school's overall budget, if the school decides to hold the course. Hence, instead of a tool, the cost structure becomes a constraint and the budget acts as a means of financial policy enforcement.

#### **D. ACTIVITY BASED COSTING**

To implement any form of Activity Based Costing (ABC), one must consider whether the required restructuring, re-organizing, and reprocessing are valued more than the initial/current system. ABC has distinct rules that affect the core of every cost driver.

In order to implement ABC at the two institutions, all the processes, procedures, and resulting costs should be analyzed. It was mentioned previously that the cost drivers are not fully identified in the current cost structures. To implement ABC identification of cost drivers must be complete.

Implementing ABC can be a significant step towards cost efficiency. However, the cost of such systems can also be significant. The costs and benefits of an ABC system need to be studied in future research for both educational institutions before an implementation decision can be made. The current research indicates that ABC systems would be of value but the issue should be studied in more detail.

#### **E. CONTROL SYSTEM**

The budget at the two institutions of higher education is a management instrument and in some cases could be a control system, but in most cases the budget is used to manage the flow of funds to the respective agencies. Outside of serving as a funds flow control mechanism, the budget offers little from the perspective of control. For instance, it does not directly deal with questions of the efficiency of expenditures or efficiency in planning. One must spend the funds as directed and plan as provided. Merchant and Van der Stede (2003, 5) state that:

The system must be judged in terms of the purposes they are intended to serve. Just because a company prepares a plan does not mean that it is engaging in useful planning...Often plans are prepared but not used; they just take up shelf space....For plans and mission statements to have a significant effect they must match the business conditions the company is



facing at any particular time so that they can be used as a near-constant guide for employee actions. They must be linked to individual or group responsibilities for performance that force them to be used in running the company. This is where budgets play an important role. Budgets turn plans into performance targets that affect employee motivation because the targets are often linked to performance evaluations and rewards.

However, the lack of control systems is apparent throughout the academic research dealing with higher education, apart from the use for budgetary execution control. There could be various reasons for the inadequate control systems, including the academic mentality of freedom, the lack of standardization, the lack of information, game playing due to scarce resources, or the promotion of incorrect measures. Budgets, as a funds distribution instrument, do not constitute a control system to accomplish the institutional mission and achieve behavioral alignment. To move the budget from a funds distribution instrument to a more robust control instrument requires a focus not just on effectiveness but also on efficiency.

The institution must want to reduce costs and increase academic productivity. It is questionable how many institutions really want to reduce or control costs.....Some [institutions] prefer to hope for better financial times rather than deal with higher education's new economic reality. They are Alcoholics in denial...Just as the only alcoholics who can be helped by Alcoholics Anonymous are those who want to stop drinking, so too must institutions want to reduce costs in order to take the next step (Wigg 1999, 7).

Former dean of the College of Arts and Science at Harvard University Henry Rosovsky (1992, 3A) admits that even at the dean level, control is limited. He states that:

American faculties, when viewed as social organisms, are characterized as operating without a written constitution, and with very little common law. That is a poor combination, especially when there is no strong consensus concerning duties and standards of behavior. This situation has been made infinitely worse by the lack of information in the basis of [academic] deans concerning [the workload of] individual professors....A wise senior colleague ...strongly argued that the administration should assume most of the blame precisely because of our manifest unwillingness to set clear tasks and clear limits. The university setting and competition with other institutions make these assignments difficult...From a point of view of a dean, two observations are in order. First, the dean has only the vaguest

notion concerning what individuals teach. Second, the changes that have occurred [in faculty workload overtime] were never authorized at the decanal level. At least that is what I believe, and that is my main point. No chairman or group of science professors ever came to the dean to request a standard load of one-half course per year. No one ever requested a ruling concerning for example, [workload] credit for shared courses. Change occurred through the use of *fait accompli* i.e. creating facts.

Middaugh (2001, 5) argues that institutions of higher education are not different from other institutions in their measure of productivity:

Attempts to describe faculty activity have been misguided, ill-conceived and poorly executed. When institutions have tried to talk about faculty productivity, they have spoken often in terms of what faculty does. An example would be 'Faculty on average spend X percent of their time teaching, Y percent doing research and so on'. These may be important data, but they are not productivity measures. Quite candidly, it matters little whether a faculty member spends nine or ninety hours per week in the class room or research laboratory unless there is some assessment of the quality of the product that comes from the time spend. Simply being busy does not mean being productive. The existence of 'productivity data' implies that products have been examined.

To add more complexity to the landscape it must be noted that the FTES benchmarks that are used by CSUMB to set state budgeting standards, cannot be considered as a means of standardization or as a control system for the cost structure since the costs are not adjusted to capture variations, such as the cost of living. CSUMB is funded per student, as indicated in Chapter IV, via an unadjusted benchmark. The unadjusted benchmark does not capture the cost of living in the area surrounding the institution.

Another control system input could be the institutional mission. The institutional mission could influence the direction of the institution's control system regarding costs. The institutional mission should provide the framework and context for all activities that occur at the two institutions; institutional activity could then be the control for productivity and the (resulting) expenditure of resources. But the mere expenditure of

funds does not mean that the institution's mission has been met. The fact that the institution has an approved mission statement and strategic plan does not mean that it is used as a control system.

#### **F. OVERSTATING THE INSTRUCTIONAL COST FACTOR**

Tenured and tenure-track faculty cost represent a relatively fixed cost. Once tenure is conferred, these individuals represent recurring costs until retirement. However, these recurring costs are only a portion of the instructional cost incurred. Nevertheless, instructional cost is the most visible cost for the institutions and represents a cost in which it is feasible to measure return on investment. The return on investment is likely to vary across disciplines. Thus, disciplinary mix becomes a relevant factor in the instructional cost discussion.

Disciplinary mix is the relationship of cost to variables such as department size, proportion of tenured faculty, volume of students, credit hours taught, and personnel expense as a percentage of total instructional costs (Middaugh *et al* 2006, 102). It seems that the comparatively inexpensive disciplines are expected to cancel out the more expensive programs. However, it does not appear that the institutions' structure curricula to achieve financial balance. For the institutions, the structure in place appears to be more consistent with the institutional mission and the academic needs of the students; as pointed out earlier, their budgets should also comply with these principles. The NACUBO cost study does not discuss the issue of disciplinary mix.

#### **G. DISTORTED INCENTIVES**

Due to any number of reasons, including the idiosyncrasies of the individual schools, (e.g., the lack of information, an apparent general unwillingness in academia, the lack of knowledge in regards to the current cost structure, and possibly a lack of trust) it is understandable that both the faculty members and the administration will have difficulty proceeding to the construction of a full-scale cost structure model. If the models

were constructed without the agency's full understanding and support of the model and its data requirements, the data input/entry may not be accurate, but managed to meet some perceived need.

The current cost models were constructed to reflect past expenses based on historic activity information. Given this historic emphasis, the agencies receive a budget to manage that does not incorporate the agencies' knowledge of the future.

Budget planning based on the previous year's historical data does not help to improve and upgrade the cost structure. The initial outputs from the cost structure used for planning purposes are not compared to the actual expenditures at the end of the year, to help identify errors in the estimating process.

Since the actual performance of the agencies' planning does not seem to be taken into account, providing detailed administrative cost information appears to have little or no value, since its use is not obvious. There appears to be little incentive to fill out the forms accurately and precisely. Rather than providing detailed information in the model's formulas, ratios and data are used which mask missing information. Thus the cost structure model includes information that will likely lead to poor estimations.

In an attempt to avoid poor estimates, the administration bases the cost structure on the instructional cost. The instructional cost serves as a control for expenditures and demonstrates accountability better than any other cost driver. Accountability is required due to the limited resources. For this reason the budget becomes a primary means to implement institutional policy and as such it is processed from the administration to the agencies for execution to meet short-term requirements, which at times would appear to disregard the institutional mission.

The budget is not focused on the future, namely "how many [students] am I expected to have this year" (Brimson and Antos 1994, 266); rather, it is developed based on the number of students in the school or department during the previous last year. When the number of students during the current year exceeds the number of students attending the previous year, the budget is not sufficient to cover the cost, even through utilization of the capacity range variable, which as noted earlier is not normally known by

the agency. Providing the resources that would be sufficient for the previous year's mission does not engender confidence in the resource allocation system.

In conclusion, the lack of a control system designed to reflect planning by the administration and agencies, and the budget as planned and managed, creates incentives to secure increased resources to cover costs. The incentives do not facilitate the implementation of a cost structure based on the true cost drivers. Regardless, the agencies have to manage their funds to fulfill the institutional mission, irrespective of the administrative cost drivers. Since an agency's aim is to manage the budgeted funds provided based on the previous year to complete the mission of the current year, the main focus of the agency is the scarcity of resources. Efficiencies are left to be assessed from the budget execution results. The current cost structure is used to justify the expenditure and to prove accountability more than as a tool for efficient decision making in regards to the institutional mission.

## **H. CONCLUSION**

The two institutions should continue to incorporate the cost structure into the electronic model. Once the cost structure is fully incorporated, the necessary data from year to year will be able to provide a comparative view and realistic inferences regarding the entire institution. The comparative view across schools will result in more efficient planning. Furthermore, the comparative view across time will enable the administration to trace and update incorrect estimates included in the cost structure or the model. Incorrect estimates due to fault in the design of the cost structure, and due to the inputting of wrong assumptions or data in the model, will be identified and addressed.

Moreover, the value of adding additional activities must be assessed, in terms of value to the institution and to the agencies. Although activities such as providing infrastructure might not be included in an agency's budget directly, infrastructure may affect indirect funding or the institution's total cost. Therefore, it should be assessed.

Furthermore, the administration must allow the agencies' access to the cost model while taking into account the agencies' view to improve the existing model, at least to the point that it affects the agency. The specific knowledge that faculty and staff have of their agency's idiosyncrasies could in effect help the model to evolve more rapidly and more efficiently.

## LIST OF REFERENCES

- ACE (American Council on Education). "Straight Talk about College Costs and Prices: The Final Report and Supplemental Material for the National Commission on the Cost of Higher Education," March 1998.
- Black, J. Steward and Hal B. Gregersen. *Leading Strategic Change*, Prentice Hall, 2002.
- Brand, Myles. "The Challenge to Change: Reforming Higher Education." *The Educational Record*, Fall 1993, Vol. 74, No. 4, Research Library, 6.
- Brewer, Peter C., Paul E. Juras and Richard E. Brownlee. "Global Electronica Inc.: ABC Implementation and the Change Management Process." *Issues in Accounting Education*, Feb 2003, Vol. 18, No. 1, ABI/INFORM GLOBAL, 49.
- Brimson, James A. and John Antos. *Activity-Based Management*. Wiley, 1994.
- Baum, Sandy and Kathleen Payea. "Trends in Higher Education Series 2005." CBASC, College Board's Annual Survey of Colleges, 2005.
- Clemen, Robert T. *Making Hard Decisions*. Duxbury Press, 1996.
- Cokins, Gary. *Activity-Based Cost Management: An Executive's Guide*. Wiley, 2001.
- CSU, California State University,  
[http://www.calstate.edu/budget/FeeEnrll\\_Info/FeeInfo/Campus\\_Mand\\_Fees/06-07mandfees.pdf](http://www.calstate.edu/budget/FeeEnrll_Info/FeeInfo/Campus_Mand_Fees/06-07mandfees.pdf) (accessed 06/13/07).
- Eckel, Peter D. "Decision Rules Used in Academic Program Closure." *The Journal of Higher Education* 73(2) (March/April 2002): 237.
- Granof, Michael H., David E. Platt and Igor Vaysman. *Using Activity-Based Costing to Manage More Effectively*. University of Texas, 2000.
- Horn, L., C. C. Wei and A. Berker. *What Students Pay for College: Changes in Net Price of College Attendance Between 1992–93 and 1999–2000*. U.S. Department of Education. Washington, DC: National Center for Education Statistics, 2002.
- Kaplan, Robert S. and Robin Cooper. *Cost and Effect: Using Integrated Cost Systems to Drive Profitability and Performance*. Harvard Business School Press, 1998.
- Kyle, Ken. "To See or Not to See the Crisis in the Academy: A Call for Action." *Social Justice*, 2005, Vol. 32, Number 3, 128.
- Mattoon, Richard H. "Higher Education and Economic Growth," *Chicago Fed Letter*, Jan 2006, Vol. 222A, ABI/INFORM GLOBAL, 1.

- McClatchey, Christine A. "A Multi-Criteria Model for Optimizing University Tuition Structures." *Journal of Applied Business Research* 14(2) (Spring 1998): 117.
- Merchant, Kenneth A. and Wim A. Van der Stede. *Management Control Systems: Performance Measurement, Evaluation and Incentives*. FT Prentice Hall, 2003.
- Middaugh, Michael F. *Analyzing Costs in Higher Education: What Institutional Researchers Need to Know*. Jossey-Bass, 2000.
- Middaugh, Michael F. *Understanding Faculty Productivity: Standards and Benchmarks for Colleges and Universities*. Jossey-Bass, 2001.
- Middaugh, Michael F., Graham Rosalinda and Shahid Abdus. "A Study of Higher Education Instructional Expenditures: The Delaware Study of Instructional Costs and Productivity." *Education Statistics Quarterly*, Vol. 5, Issue 2, 2006.
- Miller, John A. *Implementing Activity-Based Management in Daily Operations*. Wiley, 1996.
- Morgan, R.L., E.S. Hunt and J.M. Carpenter. *Classification of Instructional Programs*. U.S. Department of Education. Washington, DC: National Center for Education Statistics, 1991.
- Moreno, Abel A. and Raghu Tadepalli. "Assessing Academic Department Efficiency at a Public University." *Managerial and Decision Economics*, Oct/Nov 2002, Vol. 23, No. 7, 385.
- Morley, James E. *Explaining College Costs: NACUBO's Methodology for Identifying the Costs of Delivering Undergraduate Education*. National Association of College and University Business Officers, 2002.
- Mutty, John E. *Practical Financial Management: A Handbook of Practical Financial Management Topics for the DoD Financial Manager*. Monterey: Naval Postgraduate School, 2002.
- NACUBO. "Explaining College Costs—NACUBO's Methodology for Identifying the Costs of Delivering Undergraduate Education." February 2002.
- "NPS, The Model—Administrative Guide." February 2007.
- Polster, Claire. "Privatizing Canada's Public Universities." *Canadian Dimension*, Sep/Oct 2005, Vol. 39, No. 5, Research Library, 18.
- RCW 28B.76.310. <http://apps.leg.wa.gov/RCW/default.aspx?cite=28B.76.310> (accessed 04/01/07).



- Reindl, Travis. "HITTING HOME: Quality, Cost, and Access Challenges Confronting Higher Education Today," 2007.
- Robst John. "Cost Efficiency in Public Higher Education Institutions." *The Journal of Higher Education* 72(6) (November/December 2001): 730.
- Shank John K. and Vijay Govindarajan. "Strategic Cost Management," *Free Press*, 1993.
- Swonger, Alvin K. and Arthur C. Mead. "Program Level Contribution Analysis: A Tool for Guiding Management at a University." *Public Productivity & Management Review*, Vol. 22, No. 2, December 1998, 177.
- Twigg, Carol A. *Improving Learning & Reducing Costs: Redesigning Large-Enrollment Courses*. Center for Academic Transformation, 1999.
- Vitt, Elizabeth, Michael Luckevich and Stacia Misner. *Making Better Business Decisions Faster*. Microsoft Press, 2002.

THIS PAGE INTENTIONALLY LEFT BLANK

## **INITIAL DISTRIBUTION LIST**

1. Defense Technical Information Center  
Ft. Belvoir, Virginia
2. Dudley Knox Library  
Naval Postgraduate School  
Monterey, California